Original Articles.

CESAREAN SECTION. AN HISTORICAL REVIEW, WITH AN ANALYSIS OF SIXTY CASES.*

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Cesarean Section, originally intended to save the child after the death of the mother, and later branded as the last resort and the most forlorn hope of obstetrics, came down through the centuries almost to our own day a much discredited operation. To modern surgery, with its asepsis and constantly improving technic, belongs a full measure of credit; and yet to those physicians of the past, who preferred the Cesarean to craniotomy and stoutly clung to their belief in its future, all mankind, mindful of the mothers of the race and their unborn babes, owes a still fuller measure of affection. Upon the indications for the operation, the last word has by no means been said. When to operate and why to operate are questions that need repeated emphasis and discussion, and it is only by the contribution of each operator's experience that a final result may be reached. In reviewing the past and presenting my own series of cases, I trust that I may at least add to the "gaiety of nations," if not to the knowledge of my brethren.

Dr. Robert P. Harris, of Philadelphia, some fifty years ago, began a statistical and critical study of this subject from the various cases that he was able to collect. His was a tedious task, undertaken for no selfish motive but solely to place the Cesarean operation where he believed it belonged, among the operations of conservative surgery, and thereby to rescue it from the low level to which it had been relegated by those, who, reckless of the child's right to life, preached the doctrine of the perforator and the crotchet. Cesarean section had never been a popular operation inasmuch as its record of fatalities had branded it as something preferable only to the certain death of both mother and child.

In England, where the gruesome record of dead women was large, it was bitterly opposed. Harris, who never doubted its superiority to craniotomy and the other destructive procedures, was big enough to see that no operation is to be measured by the mortality that follows it if the gravity of each case operated is determined by conditions that are avoidable. He felt that there was in the medical profession a disposition to undervalue to a great degree the life of the child as compared with the life of the mother, and to sacrifice it for her benefit with very little hesitation.[1] Often the child was sacrificed to no purpose, for the mother was lost by exhaustion due to the consequent delay. The operation was unsuccessful, because, not to mention the lack of modern surgical technic, it was done only after both mother and child were endangered by prolonged attempts at every other method of delivery. With a timely consideration of the child's life almost unknown, a late operation to save the mother was the inevitable result.

The British practitioners for several reasons had been unfortunate in their Cesarean mortality, and their resultant distrust of the operation spread to this country. Churchill, in his "Operative Midwifery," published in Dublin in 1841,[2] gave some statistics showing the relative merits of the several destructive operations and the Cesarean. In a series of 251 destructive cases 52 mothers died, or about one in five. Of course all the children were lost. Out of 40 Cesareans among British practitioners up to this time, only 11 mothers recovered, and but 22 children were saved. Among Continental practitioners, out of 369 cases of section, 217 mothers recovered and 138 children were saved; and in connection with the children it may be stated that the result to the child could be learned in but 187 cases. On these statistics, wrongly analyzed, because no deductions were made in favor of children saved, was based the hostile attitude of the English, until Dr. Harris, with an enthusiasm, and breadth of vision that now shows him to have been far in advance of his time, appeared as the champion of an almost lost cause.

By the year 1878, besides collecting all available cases in this country, he had with the assistance of Dr. Radford, one of the few British supporters of the Cesarean operation, totalled 118 cases in the United Kingdom.[3] Of these last, only 20 were operated early, and of those 20 only 4 recovered. Out of the whole 118 there were but 22 recoveries and only 67 children were born alive. Forty years has shown no improvement over the facts stated by Churchill. Summing up the whole record, the United Kingdom in its first 120 years of Cesarean history saved only 10 women out of 68, and in its last 20 years, only 12 out of 50. This was due to the teaching of the so-called obstetrical leaders of the time. In passing it may be of interest to remark that the first recorded case in the United Kingdom dates back to January 19, 1738, when Mary Donnally, an Irish midwife, operated, near Charlemont, Ireland, on Alice O'Neil, aged 33 years, who had been 12 days in labor. The child was dead, but the patient's life was saved.[4]

An idea of the disastrous results on the Continent may be gathered from several letters written to Harris by Continental operators. Dr. Winckel, of Germany, who up to 1880 had almost as large a series as any other German operator, saved only 6 women and 9 children out of 14 cases, and this was more than all the op-

* Since this paper was written the author has added three cases to this series without any change in the mortality either to mother or child.

erators of Paris and Vienna saved in a century up to 1876, when the Porro operation was introduced at Pavia.[5] Neither Paris nor Vienna up to this time could boast of one single mother saved.[6] Dr. Girolamo Previtali of Bergamo, Italy, wrote that he lost 17 out of 19; Dr. Morisani, that they saved but 2 out of 27 in Naples; and Dr. Belluzzi, that his was the twelfth operation in Bologna and the first to succeed.[7]

It is not surprising that on the Continent the condition of the Cesarean operation was so discouraging when we look back over the record of ordinary obstetrical cases. In the Paris Maternity Hospital, between April 1 and May 10, 1856, there were 64 fatalities in 347 confinements. The hospital had to be closed, and the survivors took refuge at the Lariboisiere Hospital, where nearly all died, pursued it was thought by the epidemic. Tarnier, then a student residing at the Maternité during that disastrous time, related afterward how the ignorance of the causes of puerperal fever was such that he was sometimes called away by one of his chiefs from a post-mortem examination to assist in the maternity wards. Men seemed to be ignorant of the fact that infection might thus be carried from the autopsy room to the bed of the patient. One day in a discussion of puerperal fever at the Academy of Medicine, one of the most distinguished members of the academy was eloquently enlarging upon the causes of epidemics in lying-in hospitals, when Pasteur, that scientific genius unsurpassed in the history of all time, interrupted him from his place. "None of these things," said he, "caused the epidemic; it is the nursing and medical staff who carry the microörganism from an infected woman to a healthy one." Then when the speaker replied that he feared that it would never be found, Pasteur went to the blackboard and drew a diagram of the chain-like organism, saying, "There, that is what it is like!"[8]

From conditions so deplorable abroad, we may turn with a feeling of pride to our own country. In January, 1881,[9] the results of Harris' researches in the United States showed 120 cases with 50 recoveries and 70 deaths; but the record is best judged by its 28 timely operations productive of 21 recoveries. A summary of his work, besides being of interest, shows also the thoroughness and the zeal with which he worked upon this problem. There were 52 children born alive and 68 dead; of all these, 64 were blacks and 56 whites. Forty of the blacks died and 24 lived, while 30 of the whites died and 26 lived. There were 24 dwarfs from 3 feet to 4 feet 8 inches in height, 17 of whom were white and 7 black. Seven of these 24 dwarf mothers recovered, of whom 2 were black and 5 white. The shortest white who recovered was 3 feet 11½ inches, and the shortest black 3 feet 9 inches. Louisiana and Ohio had the most successful records, the former saving 15 out of 20 women, and 9 children; and the latter saving 7 out of 10 women, and 6 children. Nineteen of Louisiana's cases were black and one white, and the five who died were black. Ohio's cases were all white.

These two states besides leading in the number of successful cases, were also the pioneers in the Cesarean field in this country. Harris gives the honor to Louisiana, crediting to Dr. François Prevost of Donaldsville, Ascension Parish, Louisiana,[10] 4 cases, the first of which he dates prior to 1825, in which year he places the third. The date of the fourth he fixes in 1831. Prevost was born at Pont-de-ce, France, about 1764, graduated in medicine at Paris, and settled in San Domingo, but was driven out during the insurrection. He escaped to Louisiana and spent the rest of his life in Donaldsville, where he died in 1842 at the age of 78. "As he was a bold operator," says Harris, "and was 67 years of age when he operated upon his fourth case, it is quite probable that he may have had others prior to the first on our record, for he was engaged in active practice for more than thirty years in a district in which rickets was not uncommon as a cause of dystocia."

Garrison,[11] however, in his recent history of medicine, states that the first Cesarean section in this country was done by Dr. John Lambert Richmond, of Newton, Hamilton County, Ohio, in April, 1827. The date of Richmond's case is beyond dispute, for we have from his own pen the story of that historic event. In the first volume of the *Western Medical and Physical Journal,* published in Cincinnati in 1827-28,[12] there appeared a short statement that John L. Richmond, M.D., of Hamilton County, Ohio, performed the Cesarean operation on a primipara. It goes on to say that during the fifth week after operation she walked two miles in one afternoon, and in the seventh week she walked in perfect health fourteen miles in one day. Several years later the same journal[13] published Richmond's story of the operation, which deserves more than passing mention.

On the 22d of April, 1827, Dr. Richmond was called seven miles from home to see this patient, already in labor some thirty hours. He found her very much exhausted and having convulsions which continued from three to five minutes. Examination showed an unengaged head and a malformation of the vagina, in which it was impossible to make out the os. After four hours of fruitless endeavor, during which he could get no help, as the night was stormy and the Little Miami River was rapidly rising, he determined to operate. The solemnity of the occasion he well expresses: "After doing all in my power for her preservation, and feeling myself entirely in the dark as to her situation, and finding that whatever was done must be done soon, and feeling a deep and solemn sense of my responsibility, with only a case of common pocket instruments, about one o'clock at night, I commenced a Cesarean section." And when we think that this man on the outskirts of civilization per-

formed this operation on a wild night, in a house of logs with unchinked crevices, without chimney or chamber floor, assisted only by two women whose sole duty was to hold blankets to keep the wind from blowing out the candles, we wish that we could know something of his personal side. The placenta was on the anterior wall of the uterus, and before it could be removed after being incised and detached, a sufficient length of time had elapsed to cause the death of the child. It must be remembered that these were the days before general anesthesia, when pain and the consequent muscular spasm made abdominal surgery heroic work. In fact, before Richmond could deliver the child, which presented its back and was firmly held in its position, he was obliged to make a transverse incision across the muscles of the lower dorsal region, which enabled him to double up the spine and remove the dead fetus. During the entire operation, there was very little hemorrhage, and although during convalescence the patient developed a mild peritonitis, she made a rapid recovery and began to do light work twenty-four days after the operation.

Up to the early 80's, with very few exceptions, the contractions of the uterus were depended upon to approximate the edges of the incision, with the result that many cases were lost by infection due to the escape of lochia into the peritoneal cavity. The first record that we have of uterine suture goes back to August, 1769,[14] when Lebas, a surgeon in Mouilleron, France, sutured the uterus in a successful case, only to be severely criticized for his rashness. Referring to this case the "Comprehensive Dictionaire de Medicine," Paris, 1834, stated that the uterine wound did not need any special treatment, although an unskilled surgeon once introduced sutures which it was found necessary to remove.[15] The first record of uterine suture in this country, and perhaps the first since Lebas' case in 1769, is the unsuccessful case of a Virginian charlatan in 1828,[16] in which three sutures were used in the uterine incision. No record again appears until 1867 when Dr. T. Beers Townsend of New Haven and Dr. D. Warren Bricknell of New Orleans each employed uterine sutures in their respective cities. Both patients lived. Townsend used three sutures of fine hemp, and Bricknell, six of silver wire.[17] This last operator had advocated this technic in his obstetrical lectures, but had been ridiculed for his wild opinions.

These two cases, sutured in 1867, were two of the three recoveries out of the only four cases operated that year in the United States. The third recovery was the case of William Warren Greene, M.D., of Pittsfield, Mass., who had the honor of doing the first Cesarean section in this state.[18] In his case, the edges of the uterine wound were drawn together perfectly by the contractions of the uterus, and the abdominal wound was sutured with silk soaked in boiling wax. This last he used with much reluctance as he had no silver wire—a fact which worried him very much. The next four operations in the United States were done without sewing up the uterus, and only one of the women recovered. One of the deaths was due to a loop of bowel being choked in the closing uterine wound.[19]

In 1878 Dr. Curtin of Philadelphia reported a case in which he used carbolized catgut.[20] It was but the fourth in Philadelphia, and the fifteenth in this country in which uterine sutures were used, and it has also the distinction of being the first operation here in which sutures of animal material were employed. Altogether in the United States up to 1882, the uterus was sewed in but 22 cases, of which 10 recovered.[21] It seems incredible to us now that for three centuries the surgeons of the world should have left to nature the entire care of the uterine wound, with its unlimited possibilities of infection.

Defects in technic, however, could not be blamed for all the failures. Harris, who continually pleaded for the timely operation, pointed out by his exhaustive analysis of the old cases many lessons that are still valuable today. "Every surgeon in our land," said he, "should make himself fully acquainted with the steps of, and improvements in, the Cesarean operation, and especially with the value of operating as early in the labor as practicable, after he is called in; and every obstetrician should learn the comparative dangers between craniotomy in contracted pelves, and a timely delivery by gastro-hysterotomy, as applied to American women."[22] It is this need of operating timely that must be impressed upon us as much as ever today, for if it is to be successful in the highest degree, the Cesarean must be an operation of election and not one to fall back upon after the patient is exhausted and started on the road to infection.

In the old records this fatal delay is much in evidence, just as it is today. Writing in 1879,[23] Harris sadly commented on the fact that instead of progressing towards success, as all other varieties of abdominal surgery were, Cesarean section was retrograding under the teaching of those who condemned it as an operation of election or who passed it by entirely for the destructive operations. Looking over the record of this country prior to 1880 we are struck by the remarkable fact that the ten years from 1868 to 1878 showed an increasing mortality. From 1838 to 1848 we had eight sections with four live women and five children. Three of these operations were timely. From 1848 to 1858 we had twenty-seven operations with a saving of 13 women and 15 children. Here 8 were timely. From 1858 to 1868 we record 23 operations with 13 women and 8 children saved. Of these 5 were timely. From 1868 to 1878 our Cesarean operations numbered 27 and we can boast of but

4 women and 13 children saved. In this last group only five of the operations were timely. Of the cases that died we find two, three, four, seven, and fifteen days recorded as the time of labor, and there were three of these cases in the fifteen-day class. The manner of death as recorded is indicative of the effect of long delay, *i.e.* peritonitis 8, exhaustion 8, hemorrhage and exhaustion 2, septicemia 2, etc. The conclusion is evident. The profession was not ready to accept the fact that in early operation lies the hope of both mother and child, and that the chances of either rapidly diminish as labor advances.

Criticism of the general practitioner for his lack of faith in the Cesarean would be unjust because he was only following the opinion of the leaders. Playfair, in his book of Midwifery, published in 1878, stated emphatically that great as are the dangers attending craniotomy in extreme difficulty, there can be no doubt that we must perform it whenever practicable, and only resort to Cesarean section when no other means of delivery are possible. He even went so far as to characterize as bold the man who preferred it to craniotomy. Fortunately for us, men of the type of Richmond and Prevost were bold. It may be that boldness was the only salvation of the pioneers of the operation in this country. Many of them probably lacked the necessary destructive instruments. It was fortunate for Richmond that he was seven miles from home and unable to procure a destructive kit, even if he owned one, that eventful night near the banks of the little Miami when his little pocket case wrote a chapter worthy of the best in the history of American medicine.

Furthermore, when in 1835 Dr. Meigs,[24] of Philadelphia, told Mrs. Reybold after the second craniotomy that he would not destroy her child if again she became pregnant, he too added glory to the history of American medicine. Mrs. Reybold, who was born in Ireland in 1809, came to America in early childhood and married at the age of twenty-one. A year later, when at full term pregnancy, it was discovered by her attending physician that her pelvis was much deformed by previous rachitic disease. A number of consultants were called and the Cesarean operation was proposed, but it was decidedly objected to by the majority of "distinguished surgeons" present, under a conviction that it would be almost necessarily fatal to the mother. After a labor of sixty-four hours Dr. Meigs perforated the head of the already dead fetus, but was unable to deliver it by any of the appliances then in use. He was forced to delay until putrefaction had softened the child before he could remove it, which was not until thirty-three hours later. Mrs. Reybold was much exhausted and narrowly escaped death. Two years later, in 1833, she was again at full term and Dr. Meigs performed a second craniotomy, but told her emphatically that he would not destroy another child in the event of her again becoming pregnant and that she would have to submit to the Cesarean section. Falling pregnant again in due time she placed herself under the care of Dr. Joseph G. Nancrede, who determined that when the proper time came she would be delivered by the abdominal route under Dr. Gibson, who was consulted about the case. When in labor on March 25, 1835, it required two hours of waiting and urging before she would consent to the operation, and then it was only the emphatic stand taken by her father confessor that made her consent to it at all. After a labor of twelve hours she was successfully delivered by an operation that lasted but ten minutes. Two years later, on Nov. 5, 1837, Dr. Gibson was again the operator on a similar occasion. In both cases she made an almost uneventful recovery and was blessed by a boy and a girl, for both of whom she could thank the good judgment and skill of the attending physicians.

In 1879 Mrs. Reybold and her two children were still living, and, moreover, she was the grandmother of six. As Harris truly remarked,[25] "What better trophy could Dr. Meigs, if now living, present than Mrs. Reybold with her two children and six grandchildren, as the fruits of his declining in 1835 to destroy any more children for her. She died in 1885, at the age of seventy-six, thus outliving the nine physicians who were present at her first operation, and the four who, with the two Gibsons, made up the group at the second. Harris, ever on the alert to add to his fund of Cesarean knowledge, performed an autopsy on her body with the assistance of Dr. Hornor, also of Philadelphia. They found evidence of old rachitic disease and a badly deformed pelvis, the true conjugate of which was but one and three-quarters inches.

Such is the story of the Cesarean operation up to 1880, when it passed into a new and more successful period of its existence. Antisepsis and asepsis and various other advances in surgical technic came to the rescue. The median abdominal and the median uterine incision became the rule and the uterus was now always sewed in layers. To Sänger of Leipsic,[26] who operated in August, 1880, in a case of retro-uterine fibroid, we are indebted for the two-row multiple system of suturing. In 1881 he reported his method. In this case he inserted six deep and four superficial uterine sutures, the latter taking up some muscle fibres, and brought the peritoneum carefully edge to edge. Later he recommended more sutures, and it was for these reasons that the so-called new operation became known as the Sänger operation, although many departures were made from his original technic. Dr. H. J. Garrigues of New York was very strong in his objection to the name Sänger Cesarean, claiming that he and many others had performed every single step of the so-called Sänger before anything had been heard in this country

about that operator's method. Said Garrigues, "There is little ground for attaching a single man's name to the operation in its present shape, which is a beautiful outgrowth of general surgical and special gynecological development, an evolution due to the combined efforts of many men working independently of each other, in different countries, especially Lister in Scotland, Spencer Wells in England, Guenoit in France, P. Muller in Switzerland, Leopold in Germany, and last, but not least, Lungren in the United States."[27]

It is true that Porro of Pavia had introduced in 1876 the operation that bears his name, and it is also true that on the Continent, especially in Italy, it had become a popular procedure. In this country its adherents were few, because our operators, unless some pathological condition demanded it, did not take kindly to an expedient that sterilized the mother. Of course Porro's only purpose in the operation was to reduce the high rate of mortality that was Italy's misfortune under the old Cesarean method. Theoretically the plan of excluding from the abdominal cavity the much dreaded uterine wound and treating its amputated substitute as an external stump, was an excellent one; but practically it was in the beginning a failure, as twenty-nine out of the first fifty women operated on died. Up to the beginning of 1892,[28] its record in 21 different countries under 224 operators showed 441 cases with 274 recoveries and 176 deaths among the mothers, and a saving of 345 children. In the number of operations, Italy led all the other countries with 154 cases that scored 85 recoveries, while we had in this country only 21 Porro Cesareans with 10 recoveries and 11 deaths. Our small number was simply due to the preference of our operators for the improved Cesarean, of which there were three to one Porro.

With the Porro meeting with such fair successes abroad, the years immediately following the adoption of the so-called improved Cesarean were especially trying for our operators who were having none too happy results. The obstetric surgeon was given an opportunity only when the risk of operating had been much increased by long labor and repeated attempts at instrumental delivery. For example, beginning with Dr. Garrigues' case in 1882, the first ten new Cesareans cost the lives of six women and three children, and in the case of our Porro operations, eight of the women were delivered of children already dead, some in a commencing state of decomposition, when the operator was called to the rescue. Nevertheless, thanks to men like Lusk, Goodell, and Kelly, our operators did not lose heart, for this triumvirate of surgeons, deserving of no mean place in the annals of our medical history, showed between 1887 and 1891 the remarkable record of ten cases with every child saved and but one woman lost.[29] Thus did we come from darkness into light, from discouragement to success, and in looking back over the whole record of Cesarean achievement we have every reason to feel proud of the great part played by American physicians.

From this time up to the present, the number of sections has rapidly increased. That in the various groups of cases reported the mortality is not as low as it ought to be is not altogether the fault of the operators. In 1909,[30] the Boston Lying-in Hospital published its first one hundred cases, the first being the one done by the late Dr. George Haven in 1894 and the hundredth being done about the middle of 1907. The largest number done by one operator was 22, while the rest were distributed among 9 other members of the staff. In this series, the deaths of 8 mothers and 8 children are recorded, —a rather high mortality, as Dr. Newell says, but easily accounted for by analyzing the length of labor before operation. Of 43 primary operations only 1 mother died; of 26 secondary operations there was the same result; but in the 31 operations that are characterized as late, we find the evident cause for the death of 6 mothers. Of these 6 who died, 3 had been in labor 24 hours or more, on one high forceps had been tried and failed, and one patient was suffering from acute nephritis. The cause of death in all these late cases except one was general peritonitis, and that one exception died of intestinal obstruction.

The record of these late cases is the old, old story of Cesarean indications unrecognized outside until too late, when the hospital is called to take the responsibility and spread upon its records a mortality that belongs to someone else. The indications for operation in this series were mainly relative or absolute pelvic insufficiency. In fact, there were only four cases in the hundred in which a pelvic deformity or repeated loss of children was not the main indication. Of these four, one was a contraction of the lower segment of the uterus following a previous myomectomy, the second was a contraction of tissues following an amputation of the cervix, the third was a faulty position of the uterus due to a previous fixation, and the fourth was a vaginal atresia resulting from an extensive operation. Since the publication of these, the Boston Lying-in Hospital has had 131 additional sections, making a total of 231, with an entire loss of 17 mothers. That its percentage of maternal mortality shows such a slight decrease is undoubtedly due to the fact that the fatal cases are the ones sent in exhausted after a tedious labor. At this hospital, the policy is never to remove or impair the function of healthy organs, and it must be a matter of great satisfaction to the operators to point to five successive and successful sections on the same woman, the fifth section being productive of twins.[31]

No institution can have a better proof of the high quality of service rendered by its physicians to the community.

In 1907,[32] Dr. Reynolds of Boston, in arguing for the elective Cesarean made an analysis of 289 cases by 20 different operators. Out of 82 operated before labor began there was but one death; out of 158 operated in the early hours of labor, there were 6 deaths; and out of 49 done after labor was well advanced there were also 6 deaths, a mortality of 12%. The majority of the deaths in the secondary and the late cases was due to general peritonitis. Dr. Reynolds himself at this time had 30 cases, all operated early and without a single death,—a truly remarkable record.

In 1908,[33] McPherson reviewed the record of sections at the New York Lying-in Hospital for the previous 19 years. The analysis showed out of 186 cases, 30 dead mothers and 13 dead children. Of the total number of cases, pelvic deformity was the indication for operation in 162. The other reasons for operating were malignant growth, atresia of the vagina, impacted face presentation, eclampsia, complete placenta previa, and large head with impacted shoulder. Of placenta previas there were two, both of which recovered. By the early part of 1912[34] the number of sections in the New York Lying-in had grown to 352, with a total mortality of 38 mothers and 53 children. Of the latter, 23 were stillborn. Twelve of the women who died had been manipulated and infected outside before they were admitted to the hospital and the causes of their deaths come under the head of general sepsis, combined on one case with spinal meningitis. One mother was brought in from the ambulance in a state of shock with a ruptured uterus, and a stillborn child in her abdominal cavity. Another mother was so far gone that she died on the table before the abdomen was opened. In another case where lobar pneumonia was the reason for undertaking the operation, both mother and child died, the mother on the first day, and the child on the fifth day after operation. Eclampsia and neoplasms claimed five deaths apiece. Pott's disease was the cause of one where the mother was moribund and the operation done merely to save the child, who fortunately lived. Four died of pneumonia and one of pulmonary embolus. These are not all the causes of the deaths, but they give us some idea of the desperate cases that find their way to the lying-in hospitals of our large cities. With the elimination of the moribund cases, where the chance of the mother's recovery was hopeless, and including general sepsis from outside previous attempts at delivery, pneumonia, eclampsia, and neoplasms, McPherson modestly reduces his mortality to 33 women, or 9.6%, which is much higher than the hospital deserves. Dr. A. B. Davis,[35] of this same hospital, has a record of 134 cases up to 1912, most of which are included in McPherson's statistics. Of these, Davis lost 17 mothers, a high mortality, but necessarily so, since he was obliged to operate a number of cases that were moribund and others that were badly infected. Good, of Boston, reported 20 cases a year ago, with no deaths of mothers or children.[36]

My own series consists of sixty cases, out of which one mother died. There was no fetal mortality. Of the mothers, 4 were under twenty years of age; 13 from twenty to twenty-five, inclusive; 13 from twenty-six to thirty, inclusive; 14 from thirty-one to thirty-five, inclusive; and 16 from thirty-six to forty, inclusive. There were 34 first pregnancies, 16 second, 1 third, 5 fourth, and 4 fifth pregnancies. Of the sections, 51 were first, 8 were second, and 1 was the third section. The following list sums up briefly the various indications:—

Eclampsia with varying degrees of justo minor pelves	7
Ecalmpsia with large baby (9 pounds) in primipara	1
Malposition of uterus after Alexander operation	1
Old tubercular anchylosed hip with deformed pelvis	2
Placenta previa complete in primipara with justo minor pelvis	1
Chronic heart with general edema plus pelvic deformity	1
Primiparous twin pregnancy with breech presenting in flat pelvis	1
Flat pelves	17
Varying degrees of justo minor pelves	29

Seven of these cases were absolute indications with internal conjugates of from two to two and three-quarters inches. In the other cases the indications were relative, which is always true in the majority of Cesarean sections. Only 16 of my cases could, by any stretch of the imagination, be called early sections. Of these 16, only 4 were operated before labor began. The remaining cases were in labor from periods of from twelve hours to four days before coming to the hospital, and one of the babies had a facial paralysis, due to attempted high forceps outside. Of the multiparous women on whom the first section was done, 16 were second pregnancies in which the first child was lost after difficult forceps operations. There was one third pregnancy with a history of two previous dead children. Four were fourth pregnancies, of which three had a history of three previous dead children each; and one had two children dead and one living. This living child had a permanent facial paralysis. In three of the four fifth pregnancies, two of whom were thirty-four and two forty years of age respectively, all previous children had been lost in difficult forceps deliveries; and the fourth case, the only fatality in my series, had a history of extremely difficult labors, the last of which resulted in a permanent brachial paralysis to the child. On this occasion she had been in labor forty-eight hours before operation with no advancement, and for twenty-four hours she had refused to submit to a section. Although she left the table in very good condition, she died ten days later of a pulmonary embolus.

It is the fortunate result of my 44 late op-

erations that makes this series interesting, but I doubt if in another similar series I would have such a happy outcome. Although all these late cases had been repeatedly examined by outside physicians, and in some forceps had been applied, it is certainly a tribute to the aseptic obstetrical technic of these men that the women came to the hospital without infection. When the operation was explained to each mother, she gladly consented, since it offered to her a living child. Moreover, it is very doubtful if any of these children could have been delivered alive by any other operation; and I am positive that the maternal mortality would not have been as low, because with babies ranging from six and three-quarters to twelve pounds, there would have been extensive laceration of the mothers, which, combined with the shock and long anesthesia, would have boded ill to these women, already exhausted by tedious labors.

Nevertheless, notwithstanding the satisfactory outcome, I want to emphasize the fact that it rather argues in favor of the early operation. I cannot agree with Hirst that we ought to test our doubtful cases by a long labor and by a cautious application of the traction rods for at least twenty minutes. Up to 1908 he had 77 cases with 5 deaths. In the last 38 of these cases there had been only one death and this was a woman operated before the onset of labor. With this one exception, all his cases were operated after periods of labor of from twelve to twenty-four hours.[37]. In 1912,[38] his cases totalled 125 with 6 deaths,—almost a 5% mortality. This is a practice that should not be encouraged, for it carries with it a mortality that Cesarean section should not be burdened with, and besides it tends to lead the obstetrician into operations of high forceps and version, which are afterwards very much regretted.

The statement of Dr. James A. Harrar,[39] of the Lying-in Hospital of New York City, is not only convincing but instructive. "Extending the indication for Cesarean section," he says, "has placed the high forceps operation decidedly on the defensive. The limitations are constantly narrowing. Many of our best obstetricians indeed go so far as to reject it as a recognized method in the treatment of dystocia; and when we consider the many deplorable consequences in the hands of the inexpert, the torn vaginae, the ruptured vaults, the vesical fistulae, and the fetal lives sacrificed, there appear good grounds for their attitude. When the forceps is used, as it so often is, to do what amounts practically to a cranioclasty, it is utterly to be condemned. The axis traction instrument will never bring a head through such a brim to the operator's credit, the proper instrument being the basiotribe." In presenting special statistics in a long series of cases by many different operators, Harrar refutes the common opinion that a version is safer than high forceps when the largest diameters of the head are still above the pelvic brim. In 60,000 labors, the fetal mortality in high forceps, including deaths in the first ten days, was 26.16%, compared with a fetal mortality in all cases of version of 41.32%. These figures, it may be said in fairness, include indications for version other than those of disproportionment. Yet, comparing the results of the two operations as employed in the treatment of 269 cases of pelvic deformity occurring in 30,000 labors, we find the infant mortality of high forceps to be 25% and that of version and deformed pelves to be 46.16%. Operations carrying such a mortality can by no means be classed as operations of election.

It may be generally stated that an indication for Cesarean section exists when an obstetrician, after a careful study of his case, is convinced that the child can only be born after a difficult instrumental or other form of delivery that may seriously cripple it for life, if it does not cause its death, and which subjects the mother to the possibility of extensive laceration, with shock and probably impairment of her future health. Formerly there was but one indication for Cesarean section, and that was the so-called absolute indication; but today it may be truly said, without employing confusing terms, that all indicatione are absolute. Unfortunately, there is no set of rules to guide us in determining these indications, and each operator must rely upon the results of his own experience. He must consider the size and the shape of the pelvis; the relative size of the child, its position, and the extent of ossification of the head; he must also estimate the ability of the mother to force that child through the maternal canal within a reasonable period of time.

In estimating the size and shape of the pelvis many factors must be considered. As one writer aptly remarks:[40] "It is unfortunate that all these important factors have not been reduced to precise calculations such as are known to the mechanical engineer in his problems of resistance. Deprive him of his carefully prepared tables and let him attempt his problems with only his senses of sight and touch and personal experiences, and his errors would soon disqualify him. The mechanical problems of obstructed labor must be more definitely systematized before our conclusions in individual cases can be scientifically accurate. Until that has been done we can only rely on individual judgment with its inherent errors." The physician who would do modern obstetrics must endeavor to satisfy himself about many facts concerning the pelvis. The external measurements upon which so much was thought to depend are of little value as a matter of fact in determining size. The information they give is indicative rather of changes in shape, and consequently they lead to a more careful study of pelvic deformity. It is in determining intra-pelvic conditions that the judgment and skill of the operator are taxed. The thickness of the symphysis, the measure-

ment of the true conjugate, the inclination of the pelvic bone, the prominence of the sacral promontory, the straightness or exaggerated curve of the sacrum, the projection and curves of the lateral pelvic walls, the depth of the pelvis, the character of the cervix and pelvic floor, —these give some idea of all the factors to be considered when we are trying to estimate the general shape and size of the pelvis. Out of the data obtained only one factor is mathematically exact and that is the measurement of the true conjugate, which when two and three quarters inches or less is always a so-called absolute indication. When more than two and three-quarters inches, it cannot, as Norris wisely says,[40] when considered apart from associated changes in the shape, inclination, and general character of the pelvis, determine the potential obstruction in any given case. He further states that his experience has led him to pay especial attention to the height of the sacral promontory, the height of the symphysis, the angle of inclination of the pelvic inlet, the angle of inclination of the symphysis, and the degree of curvature of the sacrum. In this connection we must also remember the funnel-shaped pelvis, mentioned by Williams, as existing in women who present no external deformity of the pelvis and in whom the usual measurements are normal.

In trying to reach an estimate of the size of the child, the operator is again obliged to depend only on his experience. There are no rules or instruments to serve as infallible guides, but by constant practice the obstetrician in the course of time, after making the various allowances necessary for abdominal fat and the liquor in the uterus, may become quite proficient in arriving at a fairly accurate conclusion. When the pelvic measurements are small, it behooves the conscientious obstetrician to know before the onset of labor whether he is dealing with a six or a twelve-pound baby, and the only way that he can acquire this information is by a timely and careful examination, under ether if need be.

A consideration of the physical power of the mother with reference to her ability to endure labor, especially in the presence of a large child, with a moderate degree of pelvic obstruction, is a problem that cannot be disregarded. There is a class of women, characterized by Reynolds as "the obstetrically worst equipped, who," he says, "endure even natural labor badly and show a high percentage of morbidity after the various intra-pelvic operations." I believe, with Reynolds, that this class of patients should be subjected to the Cesarean section.

The various pathological conditions affecting the uterus and the vagina must be dealt with as they occur. Abnormal positions of the fetus in primiparae show a high mortality and in the presence of border-line pelves Cesarean alone is indicated. In breech presentations in multiparae the selection of operation must depend upon the estimated proportion between the size of the fetal head and the pelvic outlet. In any case after a few hours of good labor pains, when the presenting part refuses to enter the brim, the Cesarean operation ought to be considered. In elderly primiparae, especially in those cases where another pregnancy is improbable, Cesarean section should be advised because it offers much better results for both mother and child.

In this series I have had but one placenta previa, done primarily for the pelvic condition. From this one case I am aware that no deductions can be drawn, but it seems to me that the attitude of De Lee on this question ought to carry some weight. He states that there is a reduction of the infant mortality from 50% to 5% and a reduction of the maternal mortality to at least 4%, if not below. His position is that an indication for Cesarean section will arise in cases of central and of partial placenta previa, when the pregnancy is at or near term with a living child, the mother in good condition, and the cervix closed or promising difficulty in dilatation,—conditions most common in primiparae.

In this series eight of the cases were eclampsias, all primiparae, seven of whom had contracted pelves and one a large baby. It is safe to say that no other method of delivery would have been so successful. Admitting that an abdominal operation on a toxemic patient is serious, yet I believe that the accompanying shock is less than in those cases with a rigid os where a manual dilatation consumes a long period of time and too often ends with a dead baby and with a mother badly lacerated and very much exhausted.

In conclusion, I would emphasize the fact that the Cesarean operation should be an operation of election. This means, of course, that the obstetrician puts himself in the position of a prophet, foretelling the outcome of labor. It is true that he may be criticized, but his results will be far more satisfactory to mother and child than if he puts his trust in the god of chance. Opening the abdomen of a woman exhausted by a long labor and exposed to the risk of infection, is a task from which any operator may well shrink; but since the policy of St. Elizabeth's Hospital, for religious reasons, recognizes that the child in utero has a God-given right to life, there was left open to me no other method of delivery, and its results, I am proud to say, have justified the wisdom of our choice.

REFERENCES.

[1] Am. Jour. Med. Sciences, Philadelphia, 1879, lxxvii, pp. 43-65.
[2] Churchill, Operative Midwifery, Dublin, 1841, pp. 171-173 and 203-220.
[3] British Medical Journal, 1880, vol. 1, pp. 508-510.
[4] Observations on the Cesarean Section, Radford, Manchester, 1865.
[5] Am. Jour. of Obstetrics, vol. xiv, 1881, p. 111.
[6] De Lee, Practice of Obstetrics, p. 990.
[7] Am. Jour. of Obstetrics, vol. xiv, p. 112.
[8] Life of Pasteur, Vallery-Radot, Chapter LX.
[9] Am. Jour. of Obstetrics, vol. xiv, pp. 341-361.
[10] New Orleans Medical Journal, vol. vi, June, 1879, pp. 933-942.
[11] Garrison's History of Medicine, p. 455.
[12] Western Medical and Physical Journal, 1827-1828, vol. i, p. 477.

[13] Western Medical and Physical Journal, 1830, vol. iii, p. 485.
[14] Edinburgh Medical and Surgical Journal, vol. xxv, 1826, p. 227.
[15] Am. Jour. Med. Sciences, Philadelphia, vol. lxxv, 1878, p. 327.
[16] Am. Jour. Med. Sciences, Philadelphia, vol. lxxv, 1878, p. 327.
[17] Am. Jour. of Obstetrics, New York, 1878, vol. xi, pp. 620-626.
[18] Boston Med. and Surg. Journal, vol. i, Feb. 6, 1868.
[19] Am. Jour. of Obstetrics, New York, 1878, vol. xi, pp. 620-626.
[20] Am. Jour. of Obstetrics, New York, 1878, vol. xi, pp. 613-614.
[21] Gyn. Trans., 1891, vol. xvi, p. 125.
[22] Am. Jour. Med. Sciences, vol. lxxv, 1878, p. 335.
[23] Am. Jour. Med. Sciences, vol. lxxvii, 1879, p. 56.
[24] Am. Jour. Med. Sciences, October, 1885, Dr. R. P. Harris.
[25] Am. Jour. Med. Sciences, vol. lxxvii, 1879, p. 59.
[26] Gyn. Trans., vol. xvi, 1891, p. 125.
[27] Am. Jour. Med. Sciences, May, 1888.
[28] N. Y. Jour. Gyn. and Obstet., April, 1893.
[29] Gyn. Trans., vol. xvi, pp. 111-132.
[30] Boston Med. and Surg. Jour., vol. clxi, No. 23, pp. 803-816, 1909.
[31] Boston Med. and Surg. Jour., vol. clxiv, No. 18, pp. 642-43, 1911.
[32] Gyn. Trans., vol. xxxii, 1907, pp. 43-65.
[33] Jour. Am. Med. Asso., 1908, p. 734, *et seq.*
[34] Am. Jour. Obstet., vol. 66, 1912, pp. 33-44.
[35] Am. Jour. Obstet., vol. 66, 1912, pp. 22-33.
[36] Boston Med. and Surg. Jour., vol. clxix, No. 10, pp. 345-348, 1913.
[37] Am. Jour. Obstet., vol. lviii, 1908, pp. 128-134.
[38] Practice of Obstetrics, 7th ed., 1912, p. 870, B. C. Hirst.
[39] Bulletin of N. Y. Lying-in Hospital, March, 1913, pp. 26-34.
[40] Am. Jour. Obstet., vol. lviii, 1908, pp. 100-126, R. C. Norris.

THE FASTING METABOLISM OF INFANTS.

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The investigation of the processes which take place in the animal or human body when the supply of energy from outside ceases and the total life functions are asserted by means of metabolism of the substances already present in the body, is from different points of view of the greatest interest.

The fasting metabolism forms the fundamental basis for the explanation of the existing conditions of the normal metabolism in different kinds of nutrition, for the investigation of the absolute amount of the metabolism, and for determining the food requirements of the organism under different physiological and abnormal conditions.

The fasting metabolism has been repeatedly investigated experimentally since the work of Lavoisier, the founder of our knowledge of metabolism. Although many and thorough investigations of this subject exist with animals and men, but little is known of the relation of the growing organism during fasting. Since the pediatrician uses the fasting as a therapeutic measure in the treatment of disturbance of digestion in early childhood, the whole question is of a great practical importance. In a small monograph Czerny weighed "pro et contra" of the fasting therapy from the clinical standpoint. He came to the conclusion that nurslings stand complete fasting as well as partial for a long time without evident harm, but he points to the dangers which might arise from the increase of acidosis on top of an acidosis which might already be present in a disturbance of digestion. Langstein and Benfey also expressed the opinion that the healing effect of fasting had been demonstrated in nurslings that have been ill because of overfeeding, but that fasting can also result in disease.

We know very little about the metabolism of the healthy nursling during fasting.

The few investigations which until now are at hand, as those by Ludwig F. Meyer, as well as those by Ludwig F. Meyer and by Leo Langstein, treat this question from only one angle. The former studied the nitrogen elimination in the urine of three children of different ages during two fasting days. We do not find any report of the food previous to the fasting.

The investigations of Ludwig F. Meyer and Leo Langstein show only the elimination of acetone during a three days' fast.

Rietschel demonstrated in his experiments on six babies which had been taken away abruptly from the mothers' breast and put on a three days' diet of weak tea the one fact, that the urine of five of the children reduced Fehling's solution when they received nourishment again. His results lead him to the conclusion that fasting of several days leads to a disturbance of the normal utilization of the nourishment and diminishes the power of assimilation for sugar. All other investigations were done on sick children and are, therefore, not to be considered physiological. But for us the question is how infants in absolute or nearly healthy conditions react when subjected to fasting.

We do not enter into those experiments where there is no question of real fasting, as in the experiment of Rubner and Heubner, who determined the metabolism of an infant during twenty-four hours' abstinence from food, because in this instance the metabolism and the production of energy is in a great measure influenced by the food, which was previously given. By fasting metabolism we understand the combustion of the real body material. A strict line of division cannot be drawn here, but one can reckon that the beginning of the fasting period, from the physiological viewpoint, comes only after eighteen to twenty-four hours have elapsed after food has been given.

When Schlossmann and myself began the experiments of the respiratory exchange several years ago, the hope of answering the question of the fundamental and fasting metabolism of the nursling seemed to us very small. If, then, the gaseous metabolism which corresponds to the fundamental metabolism should be determined, the organism of the subject must be kept in a perfect state of rest. Therefore every factor which produces energy and which can be avoided must be excluded,—on one hand, the muscular activity, in so far as it is not absolutely necessary for vital functions; on the other hand, the work of digestion. The children, to express myself practically, must be kept in a state of starvation and must keep absolutely quiet during the respiratory experiment. It seemed to us most improbable that healthy and normal nurslings should submit to these de-

mands, which are so apparently contradictory to the character of the infant, but it soon became evident that it was possible to carry out such investigations. The exclusion of muscular activity in the ordinary sense can be attained pretty easily if we choose suitable subjects which are not too lively, and if we undertake the respiratory experiments at a time when the infants are asleep; it was obviously best during the night. On the other hand, we were surprised that very many nurslings are very indifferent to starvation. It is necessary to swindle the nursling so that it will not appreciate that it is being starved by the way that the experiment is arranged. There should, therefore, not be any change in the daily routine evident to the nursling. Above all things, water should be given at the regular intervals in the same quantity which the baby is in the habit of getting its milk. Breast-fed infants must be accustomed to the bottle before such experiments. Our nurslings took the bottle of water willingly without exception and showed no discomfort in the course of the whole fasting period. Our experience does not coincide with that of Rietschel, whose babies cried on the first fasting day and showed signs of lassitude in the following days. Rietschel's babies also eliminated, as I mentioned before, sugar in the urine, after they were given nourishment again. We could find no sugar in the urine when we gave nourishment again after the starvation. We suppose that Rietschel used for his experiment babies only a few weeks old, but we used babies of several months.

In our investigations with the fasting babies we determined the protein, the respiratory exchange and the elimination of acetone and B-oxybutyric acid.

The metabolism of nitrogen can be studied easiest: it is sufficient to examine only the urine, because the quantity of the hunger stool *per se* and the quantity of its nitrogen is very small, so that it can be ignored. According to recent experiments the total nitrogen of the urine, 18 hours after the last meal, consists of the decomposed body substance.

The knowledge of the quantity of nitrogen which is eliminated enables us to draw conclusions as to the decomposition of protein. Furthermore, if we determine the O_2 consumption and the CO_2 production, and we know how much protein was decomposed, we can compute the amount of fat and glycogen of combustion. In that way we are able to show clearly both the metabolism and the transformation of energy.

In order to study the question of the metabolism of the fasting nursling, it was necessary to make the experiments as comprehensive as possible. A series of interesting experiments made previously on infants, as well as on dogs fed on a one-sided diet, led us to the conviction that the combustion of material during fasting depends greatly upon the previous food. Therefore we took into consideration in our later experiments infants who were differently brought up. Here I will give from our material only some very typical examples.

The first baby which was experimented on was breast fed, and had been kept on this food for a preliminary period of three days' duration. Then a fasting period of sixty hours followed, during which at the usual meal times the infant received only water, to which was added three-tenths per cent. of chloride of sodium, and which was sweetened with some saccharine.

The fasting period was followed by a period with human milk. The milk and urine were examined. The weight of the nursling at the beginning of the investigation (No. 1 = 30th of June) was 3410 grams, and two days after fasting 3600 grams.

Table 1 gives us a condensed view of the course of the exchange of nitrogen and of the waterbalance during the whole eight days' experiment.

TABLE I. (EXPERIMENT 16.)

BREASTFED INFANT.

Bodyweight at beginning = 3410 grms.
Bodyweight at end = 3600 grms.

Periods.	Per Kilo Bodyweight per Hour.		Waterbalance.		
	N. of Food. Mg.	N. of Urine. Mg.	Amount of Fluid Taken. Ccm.	Urine. Ccm.	Urine. Output in % of Intake.
Preliminary					
1. day	15.7	—			
2. day	16.6	4.76	1360	782	58 %
3. day	14.3	4.99			
Fasting					
1. day	—	5.54			
2. day	—	7.87	1680	914	54.4%
3. day ..... (12 hours)	—	7.42			
Recovery					
1. day	13.2	7.95	1270	900	70.9%
2. day	12.7	4.74			

The table shows that the elimination of nitrogen, the amount of which was 4.88 mg. per kilo per hour during the feeding period, was much higher during fasting and rose to 7.87 milligrams. The nursling receiving breast milk with a small amount of nitrogen saves more of his nitrogen during feeding than while fasting. In this case the subject was a thin baby, which had only a little glycogen and fat to dispose of, when the nourishment ceased. Therefore the protein was immediately used in a large amount. On the second day of the recovery period the nitrogen exchange regulated itself completely; the infant eliminates just as much as in the preliminary period. The appearance that the breast-fed baby eliminates more nitrogen during fasting than during the period of feeding might be a general one: for in all cases examined by us we made the same observation. With regard to the waterbalance in the preliminary period the nursling eliminated 58% of the fluid taken in the urine, during fasting 54.4%, and in the recovery period 70.9%.

Hence during the fasting period there was a considerable water retention. This was observed by slight but clearly noticeable œdema. This œdema disappeared on the second day of the recovery period, in which an increased water excretion followed through the kidneys.

The following three experiments made on one and the same infant, which was bottle fed, are reproduced in Tables 2, 3 and 4. In the preliminary period of the first fasting experiment this infant was fed on a mixture of two-thirds milk and one-third water with 5% sugar.

TABLE II. (EXPERIMENT 17.)

BOTTLEFED CHILD. G.

Bodyweight at beginning = 4360 grms.
Bodyweight one day after fast = 4370 grms.

Food: Cow's milk 2 / Water 1 / + Sugar 5% — Protein = 2.06% / Carbohydrate = 8% / Fat = 2% — Per day = 600 calories (800 ccm.)

Periods.	Duration	Per Kilo Bodyweight per Hour. N. of Food. Mg.	N. of Urine. Mg.		Waterbalance. Amount of Fluid Taken. Ccm.	Urine. Ccm.	Urine. Output in % of Intake.
Preliminary	36	27.05	17.3		1280	835	67.7
Fasting							
1. day	24	—	14.3	13.6	1600	1007	62.9
2. day	24	—	13.1				
Recovery							
1. day	24	25.3	14.8				
2. day	24	25.3	13.1	13.6	1920	1367	71.2
3. day ..... (12 hours)	12	20.3	12.0				

From that mixture the infant received 800 c.cm. per day, corresponding to 490 calories per day or 112 calories per kilo and 24 hours. The amount of calories was too small to cause an increase in the weight of the infant.

The preliminary period lasted 36 hours, the fasting period 48 hours, the recovery period 60 hours. The infant endured the fasting splendidly. There was no œdema, but in this case there was also some retention of water during fasting, as is to be seen from Table 2. From that water retention we can explain the fact that there was no loss of weight during fasting; neither did the body weight increase some days later, after the infant had taken food again. During these days there was evidently a compensation between water and body material. The amount of nitrogen in the urine decreases from 17 mg. of the preliminary period to 14 mg. on the first fasting day, and 13 mg. on the second day. During the whole recovery period it is low, a sign of a large retention of nitrogen.

After the end of this experiment we put the infant on food rich in calories, consisting of buttermilk, cream, flour and sugar. The infant received 800 cm. of this mixture per day, corresponding to 640 calories, or 140 calories per kilo. After having been fed on this food for ten days, the weight of the infant rose to 4270 gms. In this state a new investigation began which was introduced by a forty-eight hour preliminary period with this food. The fasting period lasted sixty hours; the recovery period, with the same food as that of the preliminary period, forty-eight hours. At the end of the fast the child weighed 4,800 grams. The nitrogen and waterbalance are given in Table 3. In spite of the fact that the water elimination during this fast was much higher than during the former (80.3%), nevertheless there was a certain retention which caused the appearance of œdema. On the second day of the recovery period the water elimination shows the same value as in the preliminary period and the œdema disappeared. In this case the appearance of œdema may be explained by diminished elimination of water in another way. As a matter of fact, in

TABLE III. (EXPERIMENT 18.)

BOTTLEFED CHILD. G.

Bodyweight at beginning = 4720 grms.
Bodyweight at end of fasting = 4800 grms.

Food: Buttermilk + cream + flour + sugar. Protein = 3 %
Per day 800 ccm. = 640 calories Carbohydrate = 9.5 %
Per kilo = 140 calories Fat = 3 %

Periods.	Duration Hours.	Per Kilo Bodyweight per Hour. N. of Food. Mg.		Per Kilo Bodyweight per Hour. N. of Urine. Mg.		Waterbalance. Amount of Fluid Taken. Ccm.	Urine. Ccm.		Urine. Output in % of Intake.	
Preliminary	48	37.7		24.9		1600	463 462	925	58.1 58.0	58
Fasting										
1. day	24	—		21.6			477		59.6	
2. day	24	—		12.9	16.7	1760		1412		80.3
3. day	12	—		15.4			935		97.2	
Recovery										
1. day	24	38.0 31.9	33.3	18.0 21.6	19.4	1600	643 498	1141	80.4 62.2	71.3

this case the amount of fasting stool was very small and therefore there was no elimination of water from the intestine.

The combustion of protein in this experiment was different from the previous one mentioned.

With the poor nourishment, *i.e.* two-third milk in the previous experiment, the nitrogen elimination was 17.3 mgs; now, with abundant nourishment, 25 mgs. With the larger amount of nitrogen in the food there was a greater elimination of nitrogen in the urine. During fast the elimination drops and amounts on the second fasting day only to about half of the preliminary period. The small nitrogen elimination during the recovery period shows again that after fasting, the body strives towards compensating the loss of nitrogen.

Between this and the following experiment, which began after eleven days, the infant was fed on the same nourishment with the same amount of calories. At the beginning of the experiment the infant weighed 5220 gms. After a preliminary period of 48 hours, the fast began and lasted this time 72 hours. After fasting there was a loss of 140 grams in weight, and three days later after feeding this was regained. During this time the water and solids balance each other and the body weight rises again.

TABLE IV. (EXPERIMENT 19.)

BOTTLEFED CHILD. G.

Bodyweight at beginning =5520 grms.
Bodyweight at end of fasting=5380 grms.

Food: Buttermilk + cream + flour + sugar. Protein = 3 %
Per day 800 ccm. = 640 calories Carbohydrate = 9.5 %
Per kilo = 140 calories Fat = 3 %

Periods.	Duration Hours.	Per Kilo Bodyweight per Hour. N. of Food. Mg.	Per Kilo Bodyweight per Hour. N. of Urine. Mg.	Waterbalance. Amount of Fluid Taken. Ccm.	Urine. Ccm.	Urine. Output in % of Intake.
Preliminary	48	32.7	22.7	1600	716	44.8
Fasting						
1 to 36 hours	36	—	17.6	2400	1984	82.8
37 to 76 hours	40	—	12.9			
Recovery	140	29.0	18.3	4800	2835	59.0
1 to 70 hours			18.7			
21 to 44 hours			8.5			
45 to 140 hours			20.9			

Table 4 shows the relations of the nitrogen and waterbalance. The proportion of food volume and urine volume in the preliminary period, compared with the previous experiment, is diminished; during fast it rises to 83%, and falls in the recovery period to 59%.

The nitrogen combustion shows about the same values as in the previous experiment. The general aspect of the nitrogen balance of the investigations mentioned shows to us that during fasting the combustion of protein depends in a great measure upon the previous nourishment. The more nitrogen the nourishment contains the more protein of the body material is decomposed, both on the second and third fasting day. So we see that generally during fasting of the

valuable body protein the organism decomposes less than it does during the time in which it receives protein from outside. An essential difference exists between the naturally or breast-fed infant and the bottle fed or unnaturally fed. The breast fed has an increase of nitrogen elimination during fasting, consequently there is a larger combustion of protein. This fact was already observed by Amberg and Morrill and led them to the conclusion that at a suitable composition of food the amount of the necessary protein minimum is lower for the nursling than the quantity of protein decomposed by the organism during fasting.

FIG. I.
Elimination of Nitrogen in Urine.

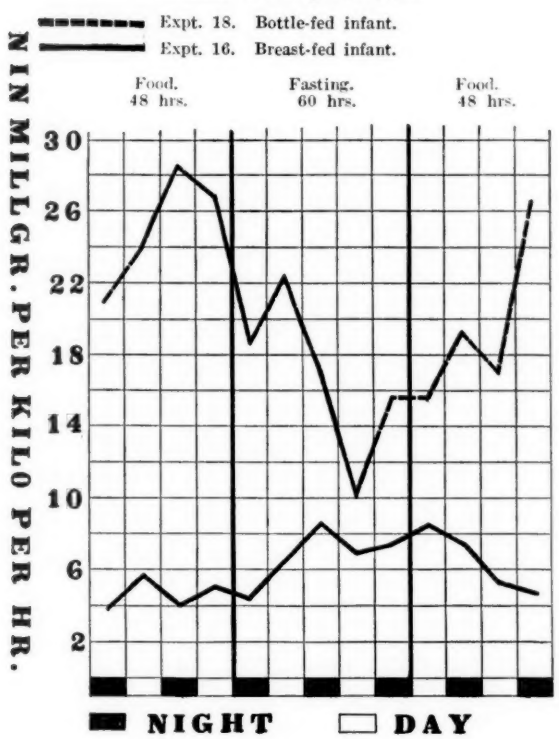
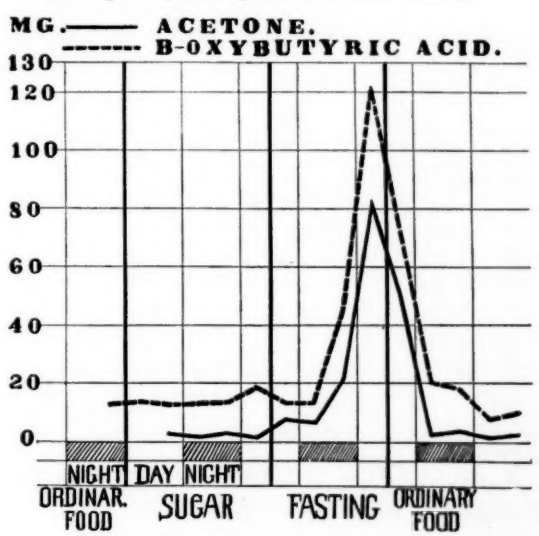


Figure I shows the difference of the nitrogen elimination between the breast-fed and the bottle fed infant during the feeding and fasting periods. The lower curve represents that of the breast fed, the upper that of the unnatural fed one. Therefore when breast fed there is less protein decomposition than when fasting. The quantity of protein which a fasting breast baby takes from his body material in order to cover its expenditures is still considerably less than the quantity of protein which an unnatural fed infant uses. Therefore, the breast-fed baby will decompose during fasting less of its body protein than the baby which has been brought up in an unnatural way. If for any reasons a breast-fed baby has to fast, it will stand this fasting with much less loss than the one which has been brought up unnaturally.

Now we enter into the second part of our investigations, into the question of acetone and B-oxybutyric acid excretion. The quantity of acetone which is excreted in the urine in an ordinary diet of an adult amounts to about 0.01 mgr. per kilo of body weight per hour. The elimination through the lungs is said to amount from two to three fold. During fast of an adult the acetone excretion rises considerably in the urine as well as from the lungs. For the nursling Ludwig F. Meyer and Leo Langstein brought figures which showed a great increase of acetone during fasting. Our experiments show that on the usual diet the nursling excretes in the urine only traces of acetone, but about 12 hours after the last meal the quantity of acetone rises first slowly and then rapidly. Quantities of acetone were excreted by our infants, which essentially exceed those in adults, on the fourth and fifth day of fast. So we found in the last mentioned experiment (No. 19) between the nineteenth and thirty-sixth hours, almost two milligrams per kilo per hour, from the sixteenth to the seventy-sixth hour 1.2 mg. In general the maximum quantities move about in the same height, as was found in Cetti and Breithaupt during fast. We also can show a considerable difference between breast-fed and unnatural fed infants. In general the breast-fed child excretes during fasting less acetone than the bottle fed child. In the breast-fed child shown above, the quantity of acetone amounted per kilo body weight per hour on the first fasting day to 0.12 mg., on the second fasting day to 0.421 mg., and on the third fasting day to 0.292 mg. With the unnatural fed child, from the 19th to the 36th hour of fast, 1.98 mg.; from the 37th to the 60th hour of fast, 0.93 mg.; from the 61st to the 76th hour of fast, 1.20 mg. Furthermore, we could state, that if one puts an infant on protein and fat fast, but gives to him carbohydrate, the acetonuria ceases. This is to be seen from Figure II.

FIG. II.
Total Elimination of Actone, B-oxybutyric Acid in Urine during Feeding Milk, Milksugar and Absolute Fasting.



In this experiment, after a preliminary period with the usual food, the infant received 1000 cm. of a 7% milk sugar solution. In this period the acetone secretion was scarcely higher than in the preliminary period. But when the sugar was left out, with one below the acetone contents rose. Hence there is no doubt that the deficiency of carbohydrate represents the causal factor in the origin of acetone, both for the nursling and for the adult. The excretion of B-oxybutyric acid runs pretty parallel to the excretion, as seen from Figure II. Its quantity is a little higher than that of acetone.

In order to complete the picture of fasting metabolism we also determined the respiratory exchange of the nursling. Therefore we have inserted in the last two experiments mentioned above, investigations of the gaseous metabolism of three hours' duration. In experiment No. 18 the respiratory exchange of the infant was determined 48 hours after the last feeding; in experiment No. 19, 48 and 72 hours after the last meal. The infant had behaved very well during the respiratory experiments, so that the figures recorded by us must be considered as resting figures during fast. We can compute the material combustion of the body by means of the figures recorded in the respiratory experiments, and knowing the nitrogen elimination.

TABLE V.

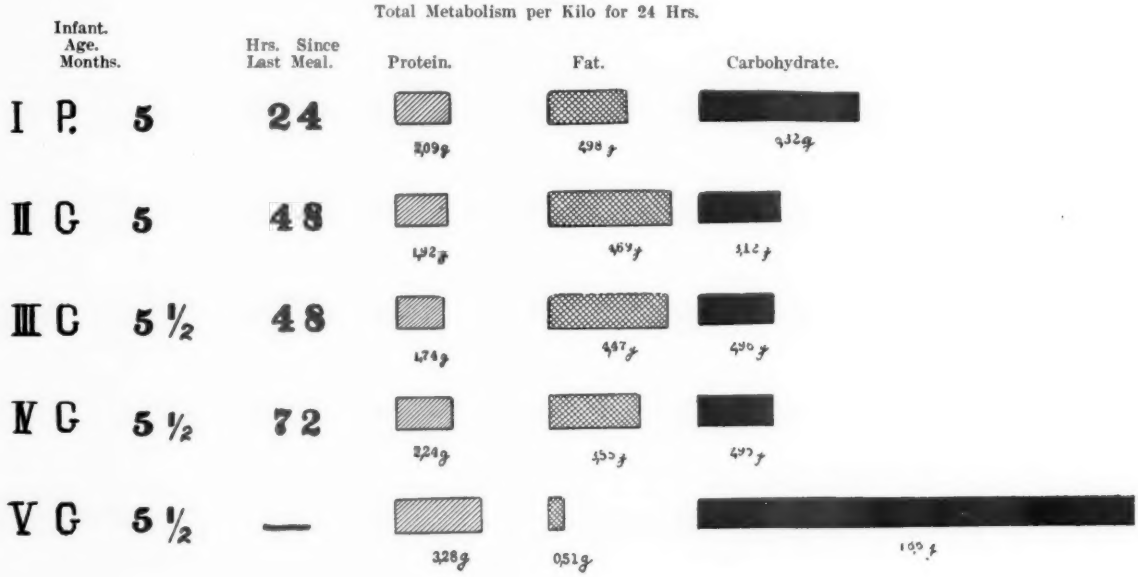
THE RESPIRATORY EXCHANGE, THE COMBUSTION OF PROTEIN, FAT AND CARBOHYDRATE DURING FASTING.

Experiment.	Duration of Fasting Hours.	Per Square Meter per Hour.		R. Q.	Per Kilo Bodyweight for 24 Hours.			
		CO_2 gr.	O_2 gr.		Protein.	Fat.	Carbohydrate.	Calories.
18	48	12.278	11.49	0.779	1.92	4.69	3.12	62.2
19	48	12.04	11.28	0.778	1.74	4.47	2.95	61
19	72	10.94	10.09	0.790	2.24	3.55	2.95	54

Table 5 shows the production of CO_2 and the consumption of O_2 per square meter of body surface. We see that there is a very good agreement between the two experiments 48 hours after the last meal. Then we see that after 72 hours of fast the production of CO_2 and the consumption of O_2 are decreased. The respiratory quotient is pretty constant. Furthermore, the table gives us the quantities of protein, fat and carbohydrate which 1 kg. of infant decomposes, 24 and 72 hours after the last meal, computed for 24 hours. It is a striking fact that the amount of glycogen was so abundant on the third day of fast that as much could be utilized as on the second fasting day. An explanation of this fact is to be found that our baby took very abundant nourishment for a long time previous to the experiments, and so had a considerable storage of glycogen. Therefore the diminution of metabolism and energy transformation in this case is to be attributed to the lower fat combustion. In an earlier experiment we have determined the fundamental metabolism of another baby (P.) 24 hours after the last feeding. Contrary to the infant G., in this case the subject was a very fat baby. With this baby (P.) per kilo of body weight per 24 hours were decomposed: protein 2.09 gr., fat

FIG. III.

Total Metabolism per Kilo for 24 Hrs.



2.89 gr., glycogen 6.32 gr., corresponding to 63 calories. The comparison demonstrates that 24 hours after taking the last meal the glycogen combustion is essentially higher, and the fat combustion lower than 48 hours after feeding. Finally, in order to show the difference of metabolism between the fasting-sleeping state and the state immediately after feeding and while awake, I add the results of another respiratory experiment, which was carried on at the end of our last experiment, No. 19, after the infant had received its known abundant food for six days. In this case the infant was put in the respiratory apparatus directly after taking the bottle, and was kept there for four hours until the following meal. During this experiment the infant slept only about 1½ hours, the rest of the time it was awake but mostly quiet or played with its fingers.

In this experiment the infant decomposed per kilo body weight for 24 hours computed protein 3.28, fat 0.51, carbohydrate 16.6, corresponding to 86.1 calories. The difference of the combustion of the single foodstuffs in the five mentioned experiments can be shown clearer by a graphical presentation which is shown in Figure III.

This figure shows the grams of protein, fat and carbohydrate which were decomposed by an infant computed per kilo for 24 hours.

Table 1 gives the amount of nitrogen in grams 24 hours after the last food. Tables 2 and 3, 48 hours after the last feeding. Table 4, 72 hours after the last feeding. Table 5 shows the relations of combustion in the first four hours after feeding. From this table we can see that in the first hours after feeding the metabolism is increased and is supplied principally by carbohydrate; during this time the fat combustion is very small. Twenty-eight hours after the last food the combustion of carbohydrate is greatly diminished; now the fat is drawn upon in large measure. This diminution of carbohydrate combustion and the increase of fat combustion becomes still more evident in prolonged fasting. Of course these figures are only suggestive of what may develop in the future. As valuable as they are, they represent only some stones of the foundation on which the building of the metabolism of babies shall be erected.

MYATONIA CONGENITA, WITH REPORT OF CASES.

By Charles Hunter Dunn, M.D., Boston,

Instructor in Pediatrics, Harvard Medical School; Physician to the Infants' Hospital.

Case 1. *History.* M. G., aged 6 months. The father was addicted to alcohol and was intoxicated at the time of conception and at intervals during the mother's pregnancy. During pregnancy the mother was well, but much worried and distracted over her husband's condition. There have been no miscarriages. The child of a previous pregnancy is healthy. The previous history of the mother is negative. The child, male, was born normally April 3, 1910. Fetal movements were felt during pregnancy and were quite as lively as those of the normal baby of the previous pregnancy. When the baby was three weeks old, the mother noticed that he seemed unusually limp, but was re-assured by the obstetric nurse in charge. When six weeks old, the mother noticed a dropping of one hand and that the hands seemed weak and limp and were not moved as freely as they ought to be. At this time she consulted a physician, who said the condition was due to weakness, that the breast milk was probably not agreeing with the baby, and advised that it be taken off the breast. When the baby was two months old he was seen by Dr. Howland of New York, who noted a marked atrophy of the muscles of the trunk and extremities, and deformity of the chest. The baby seemed to improve somewhat, at one time being able to move his arms, but later this power disappeared. He has never been able to move his legs at the hips, knees or ankles, but could make slight movements of the toes and fingers. He has never been able to sit up or to hold up his head. The mental development is normal. The breathing has been labored since the baby was three weeks old and this has grown progressively worse. On Sept. 3 the baby caught cold and since then the trouble in breathing became worse, with choking spells from mucous accumulation. To give relief the adenoids were removed on Sept. 24. The breathing was somewhat improved by the operation, but has lately become as bad as before. The weakness increased until he could no longer nurse from the breast or bottle and had to be fed with a spoon. The baby gained weight up to the time of the adenoid operation, but since then has lost.

Physical Examination. Oct. 3. Poorly developed and poorly nourished baby. The cranium was square, the forehead prominent; the fontanels depressed but of normal size; the mouth, tongue and throat were normal. There were no teeth. The pupils were equal and reacted normally. The respiration was irregular, labored and wholly diaphragmatic, but not notably accelerated. The chest showed marked increase in anteroposterior diameter, with marked lateral flattening and prominent sternum. The heart, lungs and abdomen were normal. The baby was entirely unable to hold up his head and there seemed to be a complete flaccid paralysis of the trapezius muscle. The upper extremities were not moved at all from the shoulder and very feebly at the elbow and wrist. The hands hung over in flexion when the arm was held upright. There appeared to be a flaccid paralysis of the shoulder girdle muscles with marked atrophy, particularly of the pectoralis. There was slight atrophy of the muscles of the extremities. The knee-jerk was absent.

From this time until death, Oct. 23, the condition gradually became worse, although there were temporary ameliorations. There was increase in the mucus accumulations and in the fits of choking, and the child died in one of these attacks.

Case 2. *History.* E. S., aged 5 months. Seen July 28, 1912. The father and mother are both well. One other child five years old is well. No other pregnancies. The mother had a very trouble-

some pregnancy, vomiting continuing throughout, and during the whole time she was much worried as to her condition.

Fetal movements were noted during pregnancy but were less marked than in the previous pregnancy. The mother further volunteered the statement that they seemed less lively toward the end. The baby, a male, was born two weeks before full term, after a normal but slow labor. He was delivered easily by low forceps. He weighed 7 pounds 1 ounce at birth and gained weight very rapidly during the early months of his life. He was born on Feb. 29, and on May 26 weighed 13 pounds. He was breast-fed until the middle of June and did well. Since the middle of June he has been fed on a home modification, which has agreed with him perfectly until the last two weeks, when his movements have been somewhat greenish in color. He has two movements daily and there has been no vomiting.

At birth he attracted attention by not kicking with his legs as freely and as actively as most babies, but otherwise he did not seem abnormal. He next attracted attention by not moving his left arm at all for two months except slight movements of the fingers. At the end of two months he appeared to have gained the power of moving the left arm feebly. At this time it was noticed that he had never moved his legs at all since birth except the toes and ankles, never having been able to draw up the thighs on the body, or to flex or extend the knees. He has been a quiet, phlegmatic baby, but has appeared to notice his surroundings and to develop normally mentally. He follows objects with his head and eyes and smiles. He has never been able to hold up his head, although he is able to roll the head a little from side to side. He prefers to lie on his right side; when turned on his left side he cries but is unable to turn himself back.

Ever since birth he has attracted attention by a queer panting respiration, which has been growing worse lately. He has always had some difficulty with his nursing, owing to the accumulation of mucus in the throat which causes him to choke easily. For the last three weeks the baby has been growing decidedly worse and his father has noticed a wasting about the chest and that the muscles of his limbs are not as firm as they were formerly.

In a summary of the history as to his inability to move, the following facts stand out: A notable diminution but not absence of the fetal movements. A diminution of the power of movement was present at birth, but inability to move the legs except at the toes and ankles has remained unchanged since birth. The inability to move the left arm, present at birth, has become somewhat less. It is probable that the right arm has always been more feeble than normal. Panting respiration was noticed from birth on, but no atrophy was noticed until within the last three weeks.

Physical Examination. Well developed, fairly well nourished baby. The cranium was normal; the posterior fontanel closed; the anterior fontanel of normal size, but slightly depressed. The skin and mucous membranes were pale. The pupils were equal and reacted normally, and there was no evidence of facial paralysis. There was no notable glandular enlargement. The mouth, tongue and throat were normal. The respiration was irregular, accelerated and labored, and this labored, panting character of the breathing was particularly notable during and after crying. The breathing was wholly diaphragmatic in type, there being no visible action of any of the accessory muscles. The chest was normal in size and shape, and the heart and lungs were normal. The pulse was normal in rate, rhythm and quality. The baby was entirely unable to hold up its head and there appeared to be a marked flaccid paralysis of the muscles of the neck, both the trapezius and sterno mastoids being involved. The pectoral muscles appeared to be somewhat atrophied. The upper extremities were not moved at all from the shoulder, and feeble at the elbows and wrists. The entire upper extremities appeared markedly flaccid and dropped limply when held up. There was no visible atrophy of the upper extremities, although the limbs felt less firm than normal. No tendon reflexes could be obtained in the upper extremities. The abdomen was normal. The lower extremities showed an almost complete flaccid paralysis, there being no movement anywhere except a feeble movement at the toes and ankles, while the legs felt absolutely limp, and when raised dropped limply on the bed. There was no visible atrophy, but the muscles felt much less firm than normal. The knee-jerks were absent, and Kernig's sign was absent.

In the further progress of this case, there was no change in the power of movement of the head or extremities. The choking spells became more frequent, and finally the child lost the power of swallowing entirely and had to be fed through a tube. Atrophy of the pectorals was extreme by Sept. 1, and the patient developed broncho-pneumonia and died on Sept. 9. No autopsy was obtained.

CASE 3. History. M. F., aged 5 months, was born on Nov. 22, 1913, and admitted to the Infants' Hospital April 9, 1914. The father and mother are both well. Another child 19 months old is well. There have been no other pregnancies. Nothing abnormal was noted during pregnancy except that the mother stated that the fetal movements were fainter than they were with her first child. They were, however, always present.

The baby was born at full term with normal delivery. She was somewhat blue at first and did not cry well. She was regarded as being an unusually weak and feeble baby. She was never breast-fed but did very well on modified milk. Six weeks ago she had an attack of bronchitis, from which she had fully recovered in three weeks. During this time the mother became alarmed because the baby was unable to hold up its head, but was told by her physician that this was simply due to weakness. She gained weight slowly until four weeks ago, when she weighed 10 pounds 3 ounces, but during the past four weeks she has failed rapidly. It gradually became increasingly difficult to feed her. About a week ago she entirely lost the power of sucking and had to be fed with a medicine dropper. Since then swallowing has become increasingly difficult. Much mucous and saliva accumulate in her mouth, causing choking attacks. She was finally brought to the hospital on account of her inability to swallow. On questioning the mother about the baby's power of movement, she stated that she had always noticed the extreme feebleness of the baby, but had never regarded it as very abnormal. The baby has never been able to move its legs at all except the toes, until recently she could move her head from side to side, but for the last few weeks has been unable

to move her head. She could move her arms feebly until the last few weeks; since this time she has only been able to move her fingers and hands feebly.

Physical Examination. Poorly developed and very poorly nourished. Cranium was normal in shape. The anterior fontanel measured 2 cm. and was depressed. The ears, mouth and tongue were normal. The throat was filled with mucus, but otherwise normal. The pupils were equal and reacted normally. The movements of the eyeball were normal and there appeared to be no facial paralysis. The respiration was irregular, slightly accelerated, labored and wholly diaphragmatic in character. No contraction was observed in any of the accessory muscles of respiration. The chest was extremely deformed, showing a marked increase in the antero-posterior diameter with very extreme lateral flattening. The sternum was very prominent and the costal margin flaring. There was no rosary and no enlargement of the epiphysis of the long bones. The lungs showed very harsh respiration everywhere, with numerous coarse, moist râles throughout. The heart sounds were normal. The abdomen was normal. The spleen was not felt, and the liver was of normal size. The baby was entirely unable to hold up her head and there appeared to be a flaccid paralysis of the trapezius and deeper neck muscles. The sterno mastoids, however, appeared less flaccid and were noticed to contract when passive movements of the head were made. There was marked atrophy of the muscles of the shoulder girdle, particularly of the pectoralis.

The upper extremities were not moved at all at either the shoulder or the elbow, but there were feeble movements of the hands and fingers. The arms were entirely flaccid, hanging over limply in any position in which they were held. No tendon reflexes could be obtained. The lower extremities showed a similar condition. There was no power of movement except feeble movements of the feet and toes, and an extreme flaccid condition throughout. The muscles of the limbs appeared somewhat atrophied, although less so than the muscles of the shoulder girdle. The knee-jerks were not obtained.

The patient remained in the hospital until her death on April 23. During this time she was entirely unable to swallow and was tube fed. She smiled and appeared to notice her surroundings. She had frequent choking attacks from accumulation and secretion in the throat. She developed broncho-pneumonia on April 19, and died on April 23. No autopsy was permitted.

Autopsy. A complete autopsy was made of Case 1, by Dr. Councilman, the full report of which has already been published. The anatomical diagnosis was atrophy and degeneration of the muscles, deformity of the thorax, atelectasis of the lungs, hypertrophy of the thymus, fresh thrombus of femoral artery.

The striking lesion was that of the voluntary muscles. The muscles of the neck were thin but of normal color and consistency. The pectoral muscles and all the muscles of the back and extremities were greatly atrophied. The atrophy did not affect the abdominal muscles to so great a degree. The pectoralis major was reduced to a small fascia-like band. The color of the atrophied muscles was grayish and translucent. They were more succulent and the single muscles were not easily dissected out. They seemed infiltrated with fat and fused with the surrounding connective tissue. The intercostal muscles were reduced to thin gray sheets. The abdominal muscles, though thin, had a better color than the others. The large muscle masses alongside the vertebrae were reduced to thin bands less than 1 cm. in diameter. There seemed no change in the nerves. They were of normal size and appearance and more prominent than usual. The thorax was misshapen. The antero-posterior diameter was greatly diminished; the cartilages and ribs passed almost backwards from the sternum, then took an accentuation of the normal curvature, giving a flat depression in the antero-lateral situation. The lower border of the thorax flared outward like the mouth of a bell. The diaphragm was of normal color, thickness and consistency. It seemed rather better developed than normal.

A very detailed report of the histo-pathology of this case has been published by Dr. Councilman, from which report the following points are quoted: All the muscles affected showed the same changes, though in varying degree. Section through some of the most altered muscles of the leg, with low power, shows the fibers arranged in well ordered fasciculi. The amount of connective tissue is increased. With low power, two well-defined masses of tissue can be seen. There are fibers which present the usual appearance of normal adult muscle. There are also masses of what seem to be accumulations of cells which are also arranged in fasciculi, but the masses are very much smaller than are the masses of normal muscles. Similar aggregations of cells are seen often at the periphery of a single muscle fasciculus. Occasionally, in the middle of the masses of small cells, single muscle fibers of the average size can be made out.

Under the immersion, the larger fibers for the most part appear to be normal. Occasionally, the nuclei are found in the center of the fiber. What appeared under the low power as masses of small cells are seen to be composed of very small muscle fibers. Although most of these fine fibers are arranged in fasciculi, they are also found in the midst of the larger fibers and surrounding the groups of these. In the large fibers there is considerable variation in size, and they are usually round or oval. Many of the large fibers are vacuolated, containing either a single large vacuole, or several small ones. Some of these vacuoles contain a small amount of finely granular material. The largest fibers in this muscle are almost invariably definitely round. Occasionally, especially at the periphery of the muscular mass, fasciculi are found which seem to be midway between the larger muscle masses and the small fibers, but in general there is a sharp distinction between the two. With the phosphotungstic hematoxylin there is a great variation in the muscle stain, some of the fibers being very much darker than others. The muscle fibrillae are not well stained. In the fine fibers the fibrillae are rather more prominent at the periphery of the fibers. On the longitudinal section of the muscle tissue, taken from about the same region, the same arrangement of the fibers can be distinguished. The cross and longitudinal striation is apparent in both sets of fibers, but more strongly marked in the larger fibers. The nuclei in the small muscle masses seem to be extremely numerous. They are of about the same size as in the larger fibers. Many of the fibrils are so small that when the section passes through a

nucleus this occupies the whole extent of the fiber. The apparently great number of nuclei is due to the number of fibers. When a single fiber is followed along, the nuclei are not more closely set than they are in the large fibers. The cross striations in a number of measurements are nearly the same distance apart in both the large and fine fibers. The length of the fine fibers could not be easily determined either by section or by teasing. They are never so definitely parallel to one another as in the large fibers. The masses of the large fibrils in longitudinal section are perfectly straight; the masses of the smaller fibrils present a wavy appearance as though they had not contracted at the same rate as the larger fibers. Most of the small fibers are solid and they do not present the appearance of embryonic fibers. Occasionally, however, fibers are seen which are hollow with fibrillae at the periphery, presenting much the appearance of embryonic fibers, and a fiber solid throughout most of its course may present an area where it has hollowed out. They also occasionally present swellings along their course, but as a general thing they preserve the same diameter.

The cortex, cerebellum, pons, and medulla showed in all respects a normal tissue. The cord showed only changes so slight that they would probably pass unnoticed in a routine examination. The Marchi stain showed a very slight degeneration of the myelin in the posterior columns. The same slight changes only were observed in the anterior and posterior nerve roots, and in the spinal ganglia. In the Nisel stains of the cord, no certain evidences of cell degeneration could be made out. Sections of the sciatic nerve showed very slight irregularity in the myelin, and no cellular changes. In the muscle was observed a relative diminution in the number of nerves in proportion to the number of fibers.

The plates illustrate the changes in the muscles.

Plate I. Shows a cross section of the affected muscle, with fasciculi containing a few large, approximately normal fibers, and numerous bodies appearing like cells, but which represent the cut ends of the small fibers.

Plate II. Shows the same condition in longitudinal section. There are a few normal fibers, and alongside run numerous small fibers.

Plate III. Shows a cross section in which the muscle fasciculi contain only the cell like bodies representing the degenerate fibers, no normal fibers remaining.

Plate IV. Shows a longitudinal section in which partly degenerated fibers, midway between the normal, and the small fibers are seen.

Plate V. Shows a cross section under the high power, in which two large and many small fibers are present in the same fasciculus.

Plate VI. Shows a cross section under the high power, in which a normal large fiber, with its striations, appears. Beside it run numerous small fibers, in which under the microscope, the striations are plainly visible, though they do not show so well in the photographic reproduction.

SYMPTOMATOLOGY.

In 1900, Oppenheim described a remarkable disease of early life, in which the chief symptom is a hypotonia or even atonia of the muscles. This is accompanied by a limitation of active movement, varying in degree, which, in the most marked cases apparently reaches a complete paralysis, the extremities lying motionless. Although on close observation contractions may be brought out in some of the muscles, they are weak and without locomotor effect. In Oppenheim's cases the lower extremities were always more markedly affected than the upper, and the muscles supplied by the cranial nerves were not affected at all. The muscles of the neck and trunk were affected in one case. In none of his cases were the muscles atrophied, although they were soft. Electrical stimulation showed a varying diminution of contractility up to complete disappearance. There is no disturbance of sensation, and no reaction of degeneration. There is a very marked relaxation of the joints, owing to the flaccidity of the muscles. The affection is congenital, though it may not attract attention for some time after birth. Oppenheim considers the condition to be essentially one of retarded development of the muscles, and that it tends to betterment, although he did not exclude the possibility of involvement of the nerves or spinal cord.

Since 1900, about 40 cases of this condition have been reported in medical literature, and all the main points in their symptomatology are covered by Oppenheim's original description. In the reported cases, the extremities are most frequently and most markedly affected, weakness being usually most marked in the lower extremities. The muscles supporting the head were involved in quite a number of the severer cases. Most of the reports agree as to the non-involvement of the muscles supplied by the cranial nerves, the only exceptions being two cases in which there was difficulty in deglutition, and one in which there was an inability to close the eyes. The degree of paralysis described in these reports varies greatly. In the most marked cases, no movements could be performed with the muscles affected, except at times feeble movements of the fingers and toes. In some cases contractions were observed in the affected muscles, without locomotor effect. In the milder cases there was no actual paralysis, but movement was feebler than normal, the patients being unable to walk, to stand, to sit up, or to hold up the head.

All the descriptions agree on the great atony of the muscles, and consequent flaccidity of the joints. No description of this can be better than that given by the mother of one of Collier's patients: "By whatever part of the body I held him up, all the rest of him hung down like so many pieces of yarn." Atrophy of the muscles is reported as absent in most of the cases, although in many of them it was stated that the muscles were softer to palpation than normal, with a peculiar doughy feel. There are, however, among the reported cases, a few in which atrophy was noted.

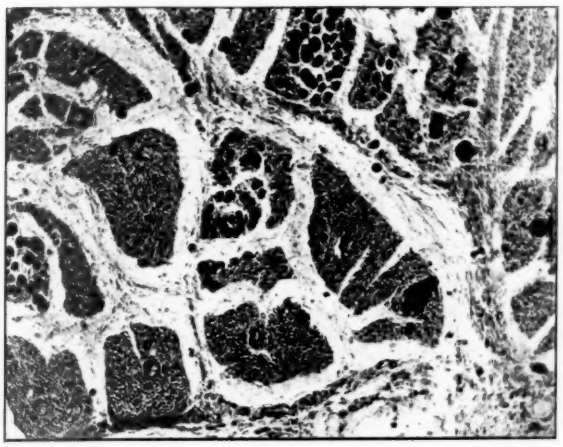
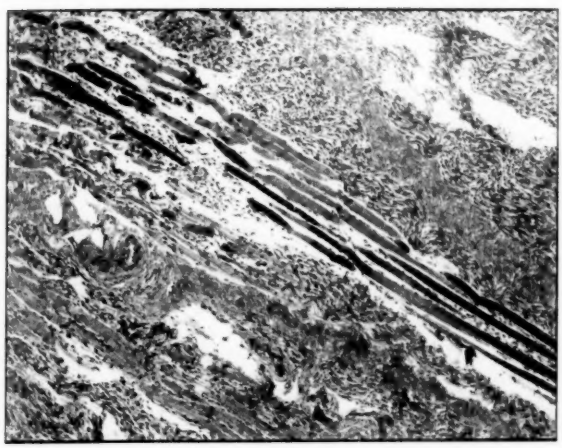


PLATE 1.



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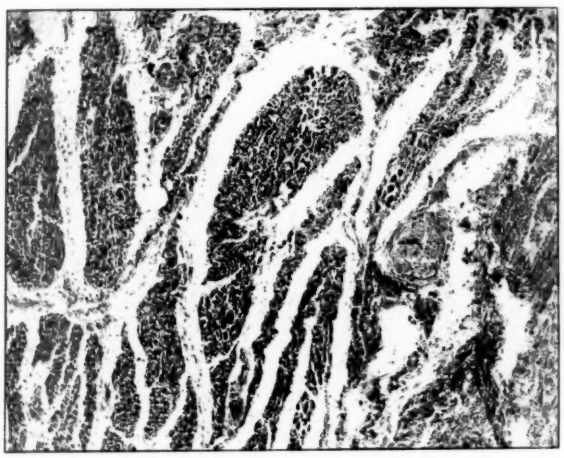

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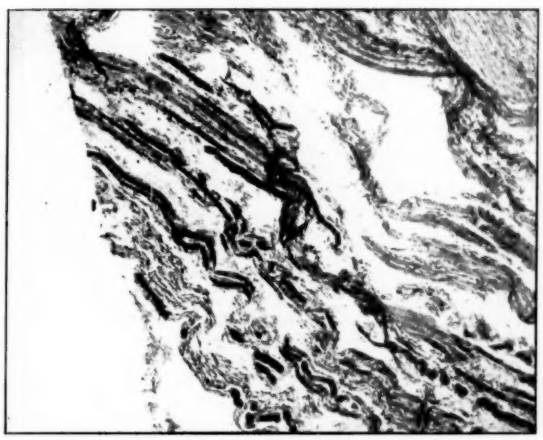

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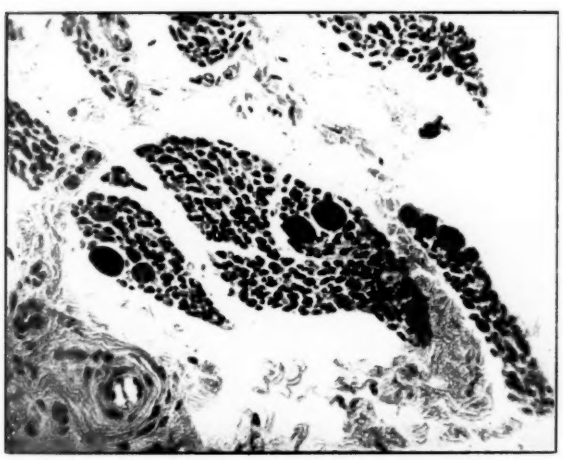


PLATE 5.

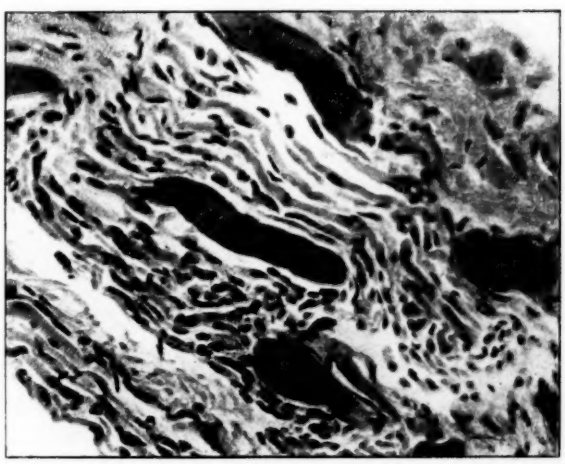


PLATE 6.

In the majority of cases the lack of movement was noted at birth or very soon afterward. In many of these cases, however, this information as to lack of movement could only be obtained by questioning, the disability not having attracted sufficient attention to be considered important by the mother, or to be a chief cause of complaint. In quite a number of the cases, the condition was noted in the earliest days of life, but only attracted attention much later when it came time for the baby to hold up its head, to sit, to stand, or to walk.

There is considerable variation in the remaining symptomatology, as described in the reported cases. Sensation appears to be unimpaired, although an abnormal tolerance of strong Faradic current has been mentioned. The deep reflexes were absent in most of the cases, although in a few of the milder ones, the knee-jerks were reported simply as present, and in a few others, as present but diminished. The reports on the reaction to the Faradic current vary greatly, being sometimes present, sometimes absent, most frequently diminished. These variations correspond in general to the severity of the case, as shown by the amount of muscular disability.

The three cases which have come under my observation agree in their symptomatology with the other reported cases. One or two points were notable, however. In all three cases a very striking symptom was the labored breathing of a wholly diaphragmatic type, which could not fail to attract immediate attention. This was due to the paralysis of the intercostal and other accessory muscles of respiration. Labored breathing, without detailed description, is mentioned in only one or two of the cases from the literature.

Another striking feature was the extreme deformity of the chest, which was present in two of my cases. It resembled an exaggeration of the most extreme deformity which is seen in rickets, and is undoubtedly caused by the early paralysis of the accessory muscles of the respiration, together with the pull of the uninvolved diaphragm. The chest deformity and the character of the breathing were so exactly alike in Cases of 1 and 3, that upon seeing Case 3 I immediately thought of myatonia congenita before hearing any of the history.

A prominent symptom in all three of my cases was the accumulation of secretion in the mouth and throat. This was undoubtedly due to involvement of the muscles of deglutition. In all three cases there was difficulty in swallowing milk, and Case 3 became utterly unable to swallow, having to be tube-fed from the time it entered the hospital until its death. In all three cases choking attacks were frequent, and Case 1 died in such an attack, while the other two cases died of broncho-pneumonia, probably due to inhalation of secretion. Difficulty in swallowing is mentioned in but two of the other reports which I have read. In my cases the involvement of the muscles of deglutition appears to be a later symptom, and to be progressive.

PATHOLOGY.

In seven autopsy records, and two additional examinations of the muscle which I have collected, there is some disagreement as to the character of the lesions. Most of them agree as to the general character of the muscle lesions. The great diminution in the size of certain muscle fibers appears to be the significant lesion. Bing, however, found the muscle normal, except for some question of nuclear increase. Holmes and Badouin found, among the small fibers, some fibers much larger than normal. Councilman considered the large fibers in our case to be of normal size, and that the photograph which Holmes gives of a cross section of muscle shows no such large fibers and might have been made from a section of the muscle in our case. Such variation in the anatomic lesions might well be expected, to correspond with the variations in the symptomatology of the disease.

There is much more disagreement as to the nervous system. In one of Badouin's autopsies, and in Rothmann's, there were lesions of the anterior horn and nerves. In the others, the cord and nerves were normal, as in our case.

The only other anatomical feature of interest is the condition of the thymus gland, which was found to be enlarged in our case, and in three of the other autopsies. The microscopic lesions found in these three cases did not differ from those found in many other thymus examinations, and there is no organ in the body which varies so ernormously in size as does the thymus in children under one year.

COURSE AND PROGNOSIS.

In two of my cases a gain in the power of movement was noted. In Case 1 this improvement was temporary only, disappearing later. In Case 2 the slight gain in the power of moving the left arm continued. No tendency toward improvement was ever noted in Case 3. On the other hand, the difficulty in swallowing became worse in all three cases, and in Case 3 the baby lost the power of moving the head from side to side.

In most of the other reported cases, the course of the disease and final outcome were not reported. The cases are by no means confined to infancy, there being 22 cases which were observed in the first two years of life and 18 in later childhood, the oldest being 10 years. In these older children there was a great variation in the amount of muscular weakness, some children being able to sit, stand, or walk. Walking was generally acquired much later than normal. It is not possible in most cases to gather from the reports whether these cases represent the result of improvement in the original condition, or a

milder involvement from the start. They only show that there is great variation in the severity of the disease.

In but 24 of the cases is there any report on the progress or outcome of the condition. In 11 cases some improvement, apparently at least, was noted. In 2 cases the condition was apparently stationary over a fairly prolonged period of observation. In 2 cases the condition appeared to become progressively worse; 9 cases died. It is difficult, however, in early life, to judge whether improvement is real or only apparent. The developing child presents no normal standard, and there is a constant normal gain in the function of movement, which might easily give a false impression of improvement. In other words, because a child with a widespread muscular lesion eventually learns to walk, it is no proof of even functional improvement in muscular power. Then, errors of observation, so important in early life, must be considered.

Nevertheless, there seems to be at least some evidence of a tendency towards improvement. Whether this improvement is only functional, or whether there is any tendency toward improvement in the actual lesion, cannot be decided. Without actual destruction of nerve cells, there should be considerable capacity for regeneration. We do not know, however, whether muscles so altered are capable of complete regeneration, nor of how much regeneration they are capable, if at all. An autopsy on a case which died from some inter-current affection after showing an apparent improvement in the muscular condition, might give us a valuable addition to our knowledge on this point.

The cases reported up to 10 years of age do not give a very favorable prognosis. In no case has complete recovery been reported. On the other hand, the severer cases appear to tend toward a fatal ending, especially during infancy. Broncho-pneumonia is the commonest immediate cause of death. Whether in these cases the process may be progressive, or whether the fatal ending is due to the combination of a stationary anatomical condition, combined with the increased demands of the growing child, we do not know.

ETIOLOGY.

We know practically nothing of the etiology of this condition. The onset appears to be gradual, as the descriptions usually do not give a very exact time of onset. While it appears to be congenital, we cannot even be sure of this, as in those cases in which the condition is reported as having been observed at birth, we cannot be absolutely sure of the accuracy of the observation. Usually the information is obtained at a later period, when parents, in their inability to fix an exact time of onset, are extremely apt to say "ever since birth." Still, it seems to me that the weight of evidence points toward the congenital nature of the disease.

The presence or absence of fetal movements might have an important bearing on the question of the congenital nature of the disease, although the degree to which these are felt presents normal variations, and their absence does not necessarily denote fetal paralysis. In the collected cases, there was mention of fetal movements in 12. The movements were felt in 8 and not felt in 4 of the cases. In two of the cases in which they were felt, they were reported as less lively than normal, as in two of my cases.

There is no reason to believe that the disease is infectious. The onset, the distribution of the lesions, the absence of focal lesions, or of any lesions pointing toward a past infection, are all against such a supposition. The disease has never been seen in either an epidemic or an endemic form. In none of the cases has the disease even appeared in connection with any acute infection.

It seems much more probable that the disease is toxic, rather than infectious. The action of the toxin appears to be directly on the muscle fibers, or possibly upon the terminal nerves or nerve endings. Councilman believes it probable that such a toxin is produced, not in the infant, but in the mother. There does not seem to be any relation between the disease and any other disturbance in the child. Councilman in our report of Case 1, advanced the hypothesis that there might be a toxin in the blood of the mother, from which she would be protected by the presence af antibodies. Both toxin and antibodies would, during the intrauterine life of the child, be transmitted through the placental circulation. After the birth of the child, the action of the toxin would no longer be counteracted by antibodies received from the mother. Councilman says, however, that under such an hypothesis, it is difficult to explain why, as in our case, single muscle fasciculi and single fibers should remain normal.

CONCLUSION.

I believe myatonia congenita is possibly much commoner than is generally supposed. Two of my cases had been long under the observation of physicians, without any suspicion that there was anything more wrong than weakness and malnutrition. The milder types of the disease, which lived long enough to show obvious improvement of the normal motor functions, would not be so likely to be overlooked. But I believe it possible that babies have been certified as dying of marasmus and broncho-pneumonia, who really had myatonia congenita.

BUBONIC PLAGUE IN NEW ORLEANS.—On July 23, the fourth death from bubonic plague occurred in New Orleans, La., since the outbreak of the infection in that city on June 27. On July 26 the thirteenth human case was reported and the twelfth infected rat killed.

Clinical Department.

THREE UNUSUAL CASES.

(Second Series.)

I. OVARIAN CYST. DIVISION AND ANASTOMOSIS OF URETER.
II. PELVIC KIDNEY.
III. ACUTE APPENDICITIS COMPLICATING DERMOID CYST OF OVARY.

BY ROBERT M. GREEN, M.D., BOSTON.

[From the Gynecological House Clinic of the Boston City Hospital.]

THE three following cases seem to deserve reporting, partly on account of their rarity, partly because they illustrate errors in technic or diagnosis which should or might have been avoided.

CASE 1.

Patient. Mrs. M. W., thirty-two, white, housewife. Entered Boston City Hospital (Gyn. Rec. 203-261), on Feb. 28, 1914.

Family history. Unimportant.

Previous history. Born in Boston. Always well as a child. Catamenia normal. One normal labor at term in 1902. No miscarriages. Following labor, patient had recurrent attacks of pain in both lower abdominal quadrants, accompanied by fever. In February, 1913, she was operated at another hospital, with removal of appendix, uterus, both tubes, and the left ovary. Uneventful convalescence.

Present illness. Ever since operation patient has been troubled with tenderness in the right lower abdominal quadrant. In Nov., 1913, she had a severe attack of pain in this region lasting for a week, and since that time has had recurrent similar attacks, not associated with fever or vaginal discharge, and requiring morphia for their control.

Physical examination. A slender, wiry woman. Mucous membranes of good color. Tongue moist and slightly coated. Teeth poor. Throat negative. Temperature 99.8°. Pulse 80. Blood-pressure 120. Hemoglobin 80%. White count 9,600.

Heart and lungs, normal.

Abdomen, soft, slightly tender and resistant in the right lower quadrant. Healed median hypogastric linear scar.

Urine, cloudy, acid, 1.034. Albumin, s. p. t. No sugar. Sediment, squamous epithelial cells and leucocytes. No casts.

Extremities, negative.

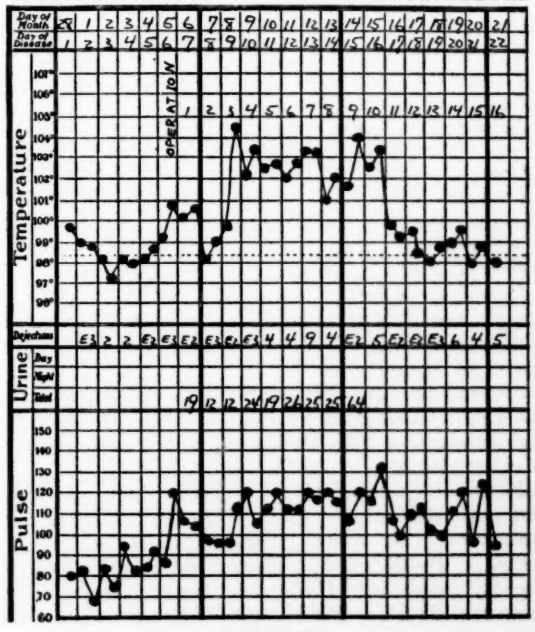
Vaginal examination shows a parous introitus, good perineum, and bilateral nick of the cervix. The body of the uterus is absent, and the left side of the pelvis empty. In the right vault is a rounded adherent, sensitive mass, the size of a tennis ball. The same mass is felt by rectal examination. Wassermann and Schwartz tests negative.

Diagnosis. It seemed probable that the patient had had a supravaginal hysterectomy and bilateral salpingectomy done for old inflammatory disease; and that the right ovary, preserved at this time for the sake of its internal secretion, had since become cystic, giving rise to the symptoms described and producing the mass felt. Laparotomy for its removal was therefore advised and accepted.

Operation. The abdomen was opened, on March 5, 1914, by an incision just to the right of the old scar, and was found free from adhesions. The stump of the cervix was felt buried below the peritoneum, and on its right was the cystic mass, as felt from below, evidently representing the right ovary, which apparently had been similarly buried at the previous operation. A transverse incision was made through the peritoneum over this mass and its removal begun. The cyst proved to be closely adherent to the side of the pelvis and buried in a mass of cicatricial tissue which effectually obliterated all anatomic landmarks. The internal iliac vessels could be recognized by their pulsation, and were successfully avoided, but in the course of the dissection the right ureter was completely divided about an inch and a half from the bladder. The removal of the cyst was completed and the severed ends of the ureter were united with five interrupted sutures of very fine silk by the method of direct end-to-end anastomosis. The ureter was then dropped back into the bed left by the cyst, and the peritoneum closed over it except at the point where a small cigarette drain was placed into the cyst-bed alongside, but not actually touching, the line of anastomosis. The abdominal incision was closed in layers to this drain, a self-retaining catheter placed in the bladder, and the patient put to bed in Fowler's position.

Convalescence. The patient made a good recovery from ether and at no time showed any marked degree of shock. On the day following operation there was slight tenderness in the right costo-vertebral angle. Nineteen ounces of urine were obtained through the catheter, and there was no leakage about the wick. On the second day, however, urinary leakage about the wick began, and the amount obtained by catheter dropped to twelve ounces. With the establishment of this leak, the tenderness over the right kidney abated and the temperature fell to normal. On the third day, patient complained of pain in right chest. The tem-

CLINICAL CHART



CASE 1.

perature rose to 104.2° at night, there was a distinct friction rub in the lower right mid-axillary region, and patient could not take a deep breath without great pain. The condition was relieved by tight strapping of the lower right chest with adhesive plaster. On the fourth day the inlying catheter was removed, and the patient voided that day twenty-four ounces of urine. The pleurisy continued till the eighth day, after which it gave no further trouble. The urinary leakage about the wick became most profuse on the fifth day, then diminished, while the amount of urine voided increased, reaching sixty-four ounces on the ninth day. On the tenth day the wick and stitches were removed, and the temperature thereafter fell promptly to normal. The urinary leakage from the sinus at first increased, then rapidly subsided and ceased on the fifteenth day. At no time after the first day was there any sign of trouble with the right kidney. Urotropin was exhibited throughout the convalescence. During the latter part of her convalescence the patient was considerably afflicted with furunculosis of the back; but this disappeared as soon as she was able to sit up out of bed. The abdominal sinus closed and the patient was discharged apparently well one month after operation. The urine was normal and the right kidney was not tender or enlarged.

The chief interest of this case lies in the convalescence. There must have been a localized peritonitis from the leakage of urine along the drain, and the right-sided pleurisy was presumably caused by lymphatic extension of this infection upward through the diaphragm. At no time was there evidence of obstructive hydronephrosis. Of course only time will show whether the patient is going to have a ureteral stricture or calculus at the site of anastomosis. She has been directed to report in three months for cystoscopy and ureteral catheterization. To cut a ureter is under all circumstances an unpardonable blunder in surgical technic. As a result of this experience, and in view of the liability of conserved ovaries to become cystic, I feel that I should never bury such an ovary under the peritoneum, but leave it free, so that it might subsequently be removable with less risk of this accident and consequent disaster.

CASE 2.

Patient. Miss L. J., seventeen, white, cigarmaker. Entered Boston City Hospital (Gyn. Rec. 203-357), on March 10, 1914.

Family history. Unimportant.

Previous history. Born in Russia. Migrated to the United States as a child. Catamenia regular, with a good deal of dysmenorrhea. No previous illnesses of importance.

Present illness. Since November, 1913, patient has had a good deal of pain in both lower abdominal quadrants, with backache, chills, and frequency of micturition.

Physical examination. A fairly well developed and nourished young girl. Skin and mucous membranes of good color. Tongue moist and slightly coated. Teeth good. Throat negative. Sternum slightly scaphoid. Heart and lungs normal. Temperature 98.2°. Pulse 80. Hemoglobin 70%. White count 9,200. Blood-pressure 108.

Abdomen, full, soft, tympanitic throughout. Slight tenderness without spasm on deep pressure in left lower quadrant.

Urine, clear, acid, 1.03. Albumin, s. p. t. No sugar. Sediment of squamous epithelial and a few red blood cells.

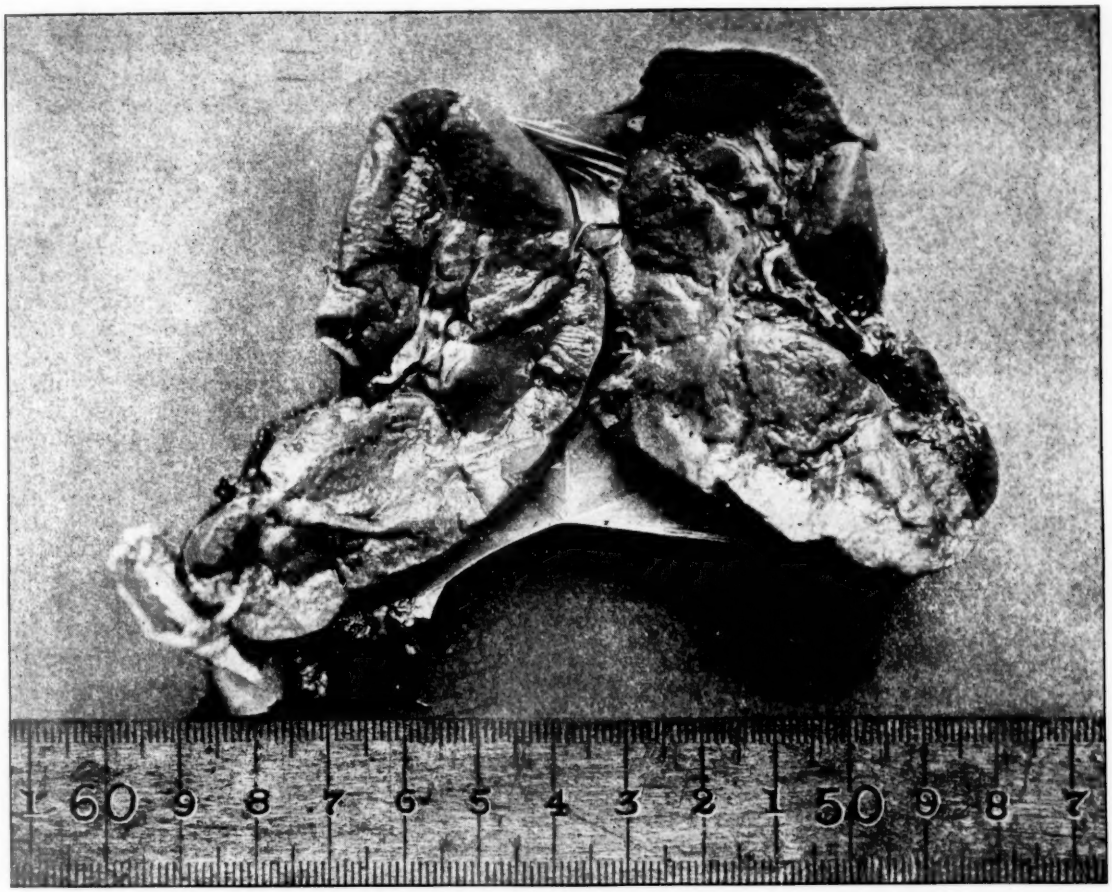
Extremities, negative.

Vaginal examination shows a stretched introitus, an intact perineum, and a small intact conical cervix. The uterus is small and pushed forward and to the right by an indefinite, rounded, slightly sensitive mass, the size of a duck's egg, which occupies the left and posterior vaults. The right vault is empty. There is a slight whitish vaginal discharge, a smear from which shows no gonococci. Rectal examination shows nothing additional.

Diagnosis. In the absence of more definite signs of inflammatory disease, the mass in the pelvis was considered to be probably a cystic ovary. In view of the dysmenorrheic symptoms produced, laparotomy for its removal was advised and accepted.

Operation. On March 16, after the usual aseptic preparation, the cervix was dilated under ether anesthesia, the uterus curetted of a small amount of apparently normal endometrium, wiped out with gauze strips, and a glass plug inserted. This was done to correct the anteflexion which it was thought might be a contributing factor in the dysmenorrhea. The abdomen was then opened, without incident, by a four-inch median linear hypogastric incision, and walling off gauzes were placed. The normal appendix was removed and the stump buried. The uterus and the appendages on both sides were quite normal. On the posterior surface of the left broad ligament was the mass as felt, which was now supposed to be a parovarian cyst. On splitting the peritoneum to begin its removal, however, it was found to be solid, and was therefore assumed to be a fibroid of the broad ligament. Several large irregular vessels, derived from the left internal iliac vein and artery, entered the mass at irregular points, but were all ligated, and the mass gradually shelled out from between the layers of the broad ligament and removed. Only upon opening it after its removal was it discovered to be a small, somewhat lobulated kidney. The stump of the ureter was then found in the pelvis, where it had been unwittingly tied off about an inch and a half from the bladder. Palpation showed no kidney in the left flank, but the right kidney present and of normal size and position. As there was considerable oozing from the bed of the ectopic kidney, a firm gauze drain was placed into the pelvis, the wound closed in layers about it, and the patient sent to the ward in considerable shock and put to bed with the foot of the bed elevated.

Convalescence. The patient made a good recovery from ether but for the first 48 hours was distressed with persistent vomiting. She was catheterized every six hours to prevent possible backward leakage from an over-distended bladder through the stump of the amputated ureter. The urine during this period was scanty, dark, and contained a trace of albumin and considerable microscopic blood. On the third day, however, the urine began to clear and increase in quantity, and the patient, who previously had been sustained by rectal seepage and glucose enemata, became able to retain food by stomach. She was kept on a strict nephritic diet till the tenth day, when the wick and stitches were



Case 2.—Pelvic Kidney. Actual Size.

removed The convalescence was afebrile, the patient was soon up and about, and three weeks after operation was discharged on a modified diet with the abdominal wound healed and the urine entirely normal.

The correct diagnosis in this case was never thought of, even after the abdomen was opened, and was made only after the ectopic kidney had been actually removed. Probably its removal was best, on account of the liability of such kidneys to cause dystocia or to become the seat of malignant disease, but of course it should not have been done without first ascertaining the presence of the right kidney. Preliminary cystoscopy and ureteral catheterization would probably have led to the correct diagnosis, but for this there had seemed to be no indication.

Congenital pelvic kidney is exceedingly rare. It generally occurs on the left. The first case in the literature was reported by Hohl[1] in 1828, the second by Hüter[2] in 1880, the third by Fischel[3] in 1885, the fourth by Runge[4] in 1891, the fifth by Albers-Schönberg[5] in 1894, the sixth by Cragin[6] in 1898. Dewis[7] in 1901 and Munro[8] in 1910 reported cases in this Journal. The latest and most complete work on the subject is by Stephan[9], who summarizes the literature in a bibliography of 211 titles.

Case 3.

Patient. Miss M. H., twenty-nine, white, saleswoman. Entered Boston City Hospital (Gyn. Rec. 204-241), on March 27, 1914.

Family history. Unimportant.

Previous history. Born in Boston. Always well as a child. Catamenia normal. No previous attack similar to the present.

Present illness. On March 21 patient was taken with pain in both lower abdominal quadrants, becoming more severe on the right. She vomited several times on that and the succeeding day. Since then she has eaten practically nothing, and the vomiting has ceased, but the pain has continued.

Physical examination. A well developed and nourished young woman. Mucous membranes of good color. Face flushed. Tongue dry and coated. Teeth fair. Throat negative. Heart and lungs normal. Temperature 102.0°. Pulse 110. Hemoglobin 80%. White count 15,000.

Abdomen, full, tympanitic throughout, with general spasm and tenderness, most marked over McBurney's point. Slight tenderness in right flank; none at costo-vertebral angles.

Urine, clear, acid, 1.024, no albumin or sugar. Slight sediment of squamous epithelial cells and leucocytes.

Extremities, negative.

Vaginal examination: intact hymen, barely admitting one finger. Intact cervix. Uterus of normal size, and in second degree of retroversion. Left

vault negative. In right vault considerable resistance and tenderness, but no definite mass. Rectal examination shows tenderness and boggy resistance high on the right.

Diagnosis. The condition was considered to be probably appendicitis, but in view of the duration, and the apparent subsidence of symptoms, it was thought best not to operate immediately but to try for further improvement under palliation.

Treatment. The patient was put to bed in Fowler's position, with nothing but water by mouth and an ice-bag to the right lower abdominal quadrant. The bowels were freely moved by enema. Under this treatment the temperature dropped, but the abdominal tenderness and spasm continued unabated. On March 29, the temperature was 100.5°, but the white count had risen to 19,600, and there was acute tenderness and spasm over McBurney's point. In view of these conditions laparotomy was advised and accepted.

Operation. After the usual careful aseptic preparation, a 4-inch right rectus incision was made and the peritoneum opened, with escape of a moderate amount of cloudy yellowish fluid, from a culture of which no growth was subsequently obtained. The intestinal coils were lightly matted together and covered with flakes of fibrin. The appendix was found at the bottom of an abscess cavity, from which it was raised and removed. It was acutely inflamed, but not gangrenous. During the removal of the appendix, a wad of hair was observed floating up in the pus from the bottom of the cavity; and on further exploration a ruptured dermoid cyst of the right ovary, about the size of a tennis-ball, was found occupying the posterior cul-de-sac and communicating with the appendix abscess, the uterus being in normal position. This cyst was now removed, and was found to contain more hair and the usual sebaceous material. A cigarette wick was placed to the bottom of the pelvis in the posterior cul-de-sac, and another to the appendix stump, and the abdomen closed in layers to the drains. The patient was sent to the ward in good condition, and placed in Fowler's position on constant rectal seepage.

Convalescence. The temperature fell to normal on the third day and the patient made an uncomplicated recovery. The appendix wick was removed on the third and the pelvic wick on the seventh day. The patient left the hospital on April 16 in excellent general condition, with a small, superficial granulating sinus at the site of drainage.

The diagnosis of appendicitis in this case was correct, but the presence of the dermoid cyst, mistaken for a retroverted uterus, was never suspected. Doubtless the cyst had existed for some time without producing symptoms; and its wall had become gangrenous and sloughed into the appendix abscess upon the development of the latter by its side.

REFERENCES.

[1] Hohl: Meckel's Arch. f. Anat. u. Physiol., 1828.
[2] Hüter: Zeitschr. f. Geb. u. Gyn., 1880, Band v.
[3] Fischel: Prag. med. Woch., 1885, No. 25.
[4] Runge: Arch. f. Gyn., 1891, Band xli.
[5] Albers-Schönberg: Centralbl. f. Gyn., 1894, No. 48.
[6] Cragin: Am. Jour. of Obst., Vol. xxxviii, p. 36.
[7] Dewis: BOSTON MED. AND SURG. JOUR., Vol. cxlv, p. 35.
[8] Munro: *Ibid.*, Vol. clxii, p. 415.
[9] Stephan: Zeitschr. f. Gyn. u. Urol., Band iii, p. 303.

PNEUMOTHORAX FOR HEMOPTYSIS.

BY EDWARD VON ADELUNG, M.S., M.D., OAKLAND, CAL.

THE value of induced pneumothorax to control bleeding from the lungs is hardly sufficiently appreciated. The older means of treating hemoptysis consists of physical and mental rest, starvation, thirst, and the use of certain medicaments. The drugs commonly employed act by slowing the blood stream (as does rest), or by reducing blood-pressure (as do rest, starvation, and thirst), or by increasing the coagulability of the blood (as do hunger and thirst). There can be no doubt that these measures employed intelligently and persistently yield results. But usually an appreciable amount of blood is lost before these measures can act, and again the bleeding is extremely likely to recur after a time. For the latter reason the patient is advised to keep his bed for a week or more after the bleeding has stopped. Thus it is seen that the medical treatment involves considerable loss of time, and subjects the patient to the unpleasant and often harmful by-effects of the drugs used. This is especially true of opium, the most valuable of the drugs used for hemoptysis.

Pneumothorax, on the other hand, acts promptly and obviates the disadvantages of the drugs mentioned. The hemorrhage having been controlled, the patient may be allowed to continue about as was his habit, perhaps even to continue at his occupation. Instead of harmful by-effects pneumothorax has a beneficent after-effect; it places the diseased lung in a condition favorable to healing.

To produce pneumothorax, air or other gas is allowed to flow through a hollow needle which has been pushed through the thoracic wall just far enough to let its lumen open into the pleural sac. As the gas enters, the negative intrapleural pressure is abolished, and perhaps a positive gas pressure substituted. This results in collapse of the lung, with perhaps some compression. Naturally the tension of the wall of the bleeding cavity is thus relieved, and the cavity is collapsed to a degree depending on the amount of fibrosis of its wall. In any case the change of pressure from negative to positive leads to the cessation of hemorrhage. By introducing a little more gas every few days the positive pressure may be maintained so that hemorrhage cannot recur, and furthermore, the sick organ, the lung, is placed at physiological rest, a condition eminently indicated in tuberculosis. And meanwhile, unless otherwise contraindicated, the patient may be allowed to go about instead of being confined to the bed.

Of course, if extensive pleuritic adhesions are present, pneumothorax is obviously impossible. This treatment is then inapplicable. Pneumothorax is possible only when the physical conditions permit the introduction of gas between the

parietal and visceral layers of the pleura. Unfortunately there is no method known by which the presence of pleural adhesion can be positively determined in advance. The only way to settle the doubt is to introduce the needle. And this may have to be done in many sites. But local anesthesia renders the procedure painlesss.

CASES.

Mr. L. began bleeding Jan. 27 and continued through Jan. 29, 1914. Bleeding was then resumed on Feb. 1, and continued in spite of usual medical treatment till Feb. 3, when nitrogen was injected into pleura. While the spit continued stained for 24 hours, no fresh blood was again obtained. No further hemorrhage occurred while under observation, a period of one month.

Mr. X., patient, was carrying a high fever, raising copiously, and bed-ridden. A nurse notified me that he was bleeding while I was inducing pneumothorax on another patient. Nitrogen was introduced into the pleura on the side that offered moist râles, and bronchi. The bleeding was immediately stopped and did not recur during an observation of four weeks.

E. W. Came with history of frequent hemorrhages, at intervals during a year. Pneumothorax was induced for treatment of the lung. No further hemorrhages occurred while under observation, a period of three months.

H. W. Was having frequent hemorrhages when first seen. Pneumothorax was induced to heal the lung. Incidentally the records showed no recurrence of hemorrhage during the period of observation,—about three months. Ten months of tuberculin treatment had yielded no result.

B. B. A. Bilateral infection with rather profuse bleeding that had continued in varying amounts during three days. Was inflated on side that presented moist râles. Bleeding stopped immediately and did not recur. Observed several months.

For the above inflations I used my portable apparatus modeled after Murphy's original apparatus. More recently Murphy has suggested an ingeniously simple procedure for meeting the emergency presented by hemoptysis. It consists of introducing a hypodermic needle into the pleural space and allowing atmospheric air to be sucked in until the patient feels distress. The needle is dulled by rubbing on a stone, the skin is cleansed, a puncture of the skin is done with any sharp instrument, and the boiled hypodermic needle is then inserted into the pleural sac with its outer end covered by sterile absorbent cotton which filters the air that passes in. I have had no experience with this method but feel that it is entirely permissible and efficient in an emergency. But however induced, pneumothorax, when practicable, is the best way to control bleeding from the lungs.

Reports of Societies.

NEW ENGLAND PEDIATRIC SOCIETY.

FRITZ B. TALBOT, M.D., *Secretary.*

The thirty-second meeting of the New England Pediatric Society was held in the Boston Medical Library, Friday, May 1, 1914, at 8.15 p.m.

The following papers were read:—

1. "The Fasting Metabolism of Infants,"* by Hans Murschhauser, Ph.D., Düsseldorf, Germany.

2. "Some Developmental Causes of Poor Health in the Child: Their Importance to the Adult,"† by Dr. John Bryant.

3. "Myatonia Congenita,"‡ with Report of Cases, by Dr. Charles Hunter Dunn.

DISCUSSION.

DR. TALBOT. Dr. Murschhauser's paper: This type of work lays the foundation for what we clinicians use in reasoning out what we will do with a sick infant, and to me it has been an extremely interesting paper. I am surprised, as Dr. Murschhauser was surprised, that this particular infant should use up so much carbohydrate after 48 hours of fast. The adults who have been experimented on at the Carnegie Laboratory showed that the percentage of carbohydrate utilized after 24 hours has dropped down to less than ten per cent. I have the greatest confidence in this work, and congratulate Dr. Murschhauser on the excellence of it, as it shows that the pediatricians, particularly here in Boston, have been right in recommending sugar solutions in the treatment of acute summer diarrheas with starvation. This evidence makes it very probable that many of our acute summer diarrheas that we starve where the symptoms are hard to combat, may be complicated by a definite acidosis, and if that acidosis can be prevented clinically, those babies ought to do very much better.

DR. LUGER: Dr. Dunn's paper. I would like to ask if any investigation was made in these cases regarding the skeletal changes, especially of atrophic character.

DR. DUNN: I do not know whether Dr. Howell has anything to say about Case 3. He saw it in the hospital, and perhaps may have something to add which will be of interest.

DR. W. W. HOWELL: The chest deformity was so striking that once seen it could never be forgotten. The chest was absolutely pulled out of shape by the diaphragmatic breathing and the loss of muscular tone of the other respiratory muscles. The child lay like a mass of jelly, without tone to any voluntary muscles. Dr. Dunn has so fully covered the case clinically and pathologically that I have nothing further to add.

DR. A. C. EASTMAN: The history of that family is rather bad, to say the least. The first child, I think, without any question, had congenital syphilis. It had a flabby muscular tone and a great deal of difficulty in taking food, besides eruptions, coryza and rhagades. At present it is in very good condition, although it still has to have mercurial

* See page 185.
† See JOURNAL, Vol. clxx, No. 21, May 21, 1914.
‡ See page 191.

treatment. The second child I saw about two months ago. At that time it presented nothing unusual, except the marked deformity,—although the legs were limp and there was practically no muscular action of the legs. Apart from that, the general muscular tone was not diminished anywhere near to the condition of that when sent to the hospital. There was very marked spasm and twitching of the arms. About a week before he was sent to the hospital I saw him again and the difficulty in swallowing had commenced, and especially the accumulation of mucus in the throat. There is a marked history of syphilis in the family which goes back two generations, and with the history of syphilis in the first child, I was inclined to think of syphilis in this child also, although there were no definite symptoms of congenital syphilis. I will agree with Dr. Howell that the appearance of the child was very striking.

DR. DUNN, in closing: With regard to changes in the skeleton in this disease, I do not think that among those autopsies is there any particular mention of examination of the skeletons. I did not get a full report of the autopsy, which has already been published, but my impression is that Dr. Councilman made a number of examinations of the bones and different parts of the body and found them normal. I know that he worked on them and that they are entered in the report as normal. In practically none of the cases reported in the literature has there been any syphilitic origin, and I did not know, until Dr. Eastman mentioned it, that there had been a syphilitic history in Case 3. The baby showed none of the known lesions as far as physical examination was concerned. It is very much to be regretted that we did not get an autopsy.

Book Reviews.

Psychopathology of Hysteria. By CHARLES D. FOX, M.D. Boston: Richard G. Badger.

The development of new theories in regard to the psychology of hysteria has been rapid during the past few years, and though there is a considerable divergence between the views of the nature of the psychological changes and their mode of origin, there is a remarkable unanimity of opinion among recent investigators in regard to many of the phenomena, and especially as to the explanation of them from the psychical side, the differences often being rather in the mode of expression than in mere fundamental distinctions. This little book contains a very good account of the mode of origin and explanation of most of the symptoms which appear in hysterical cases from this general point of view, and is to be highly commended for the clearness of the explanations. This makes it a very convenient book for the general practitioner or those engaged in other special lines of work who have been unable to follow the recent work of the many writers who have been interested in these phenomena.

If one were to find fault in any way with the writer it would be rather in the line of his catholicity in accepting as compatible with each other statements and views which to the close student of the subject seem quite contradictory, such as those of Janet, Freud, Prince and Sidis. Particularly we should hope that in another edition the author would devote more space to the exposition of the views of Freud, which, whether one accepts them or not, are rather fundamentally different from those of any other modern writer aside from those of his followers. Again, there is perhaps too much acquiescence in some of the extreme views of Babinski, as, for example, that symptoms which cannot be suggested are not hysterical, a point of view not accepted by most authorities, who consider certain perhaps rare physiological phenomena, such as anuria, among those which may be produced by hysteria.

Radium and Radiotherapy. By WILLIAM S. NEWCOMET, M.D. Illustrated with 71 engravings. Philadelphia and New York: Lea and Febiger. 1914.

Hitherto the only important English works on radium have been the small manual by Dawson Turner, which was reviewed in the issue of the JOURNAL for May 18, 1911 (Vol. clxiv, p. 723), and Finzi's more elaborate book, reviewed in the issue of June 4 (Vol. clxx, p. 884). This new American volume by Newcomet devotes considerable space to the chemistry and physics of radium, thorium, and other radio-active elements in medicine and surgery. The details and mathematical calculations are largely omitted. The second part is devoted to physiology and therapeutics. The work is a valuable addition to the now growing English literature on the subject.

Black's Medical Dictionary. By JOHN D. COURIE, M.A., B.Sc., M.D., F.R.C.P., Edin. Fifth edition, completing thirty thousand. Containing 431 illustrations in the text, and 12 plates in color. New York: The Macmillan Company. London: Adam and Charles Black.

This fifth edition of a well-known Scottish work of reference maintains the merits of the original. It is rather an encyclopedia than a dictionary, and in its simple, popular method of giving information fulfils its intention for "district nurses, teachers, clergymen, ship-captains, colonists, and others." In the main, the book seems reliable; but when it says that "transfusion has almost completely fallen into disuse," it must be regarded as, in this respect at least, somewhat behind the times.

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MEDICAL EXPERT TESTIMONY.

FOR a long time past medical expert testimony has been notoriously a subject of contention and has been attended with so many abuses that it has in a very considerable measure been brought into disrepute. Many efforts have been made both by the medical and legal professions, acting through their representative bodies, to have the matter placed on a more satisfactory basis; but thus far without success. There is perhaps no one in this country better qualified to speak illuminatingly and with conviction on this subject than Dr. Reynold Webb Wilcox, for many years professor of medicine in the New York Post-Graduate Medical School and Hospital, not only on account of a knowledge of law possessed by few physicians, but also of his very extended personal experience as a medical expert. In his presidential address before the American Society of Medical Jurisprudence delivered in May, and published in the *Medical Times* for June, he gives expression to the fruits of his elaborate study and of his matured thought upon it. He first reviews the various abuses which have crept in to such an extent that today, as he says, not only is the value of expert testimony in furthering the ends of justice doubted, but its credibility assailed, and then indicates the remedies and possible methods by which their application may be secured.

He classifies the abuses as follows: 1. Built-up cases,—generally resulting from unexpected litigation where the patient has been under the care of an ordinary practitioner. 2. The hypothetical question, which may be improper in at least three ways: unscientific in language, misleading from lack of perspective, and dangerous in formulating conclusions. The unconscionable lengths to which some of these go obscure, by the insertion of so much that is irrelevant and immaterial, the real facts upon which a proper conclusion may be based. 3. The dual capacity of the medical expert. The combining of the two entirely distinct functions, that of medical counselor and that of medical expert, weakens the force and value of medical expert testimony. 4. Conclusions based upon the examination of others. If the alleged facts are untrustworthy and are inaccurately presented, the conclusion is more than likely to be misleading. 5. Contingent fees. 6. Cross-examination. This should be limited to the facts in evidence, and while a certain amount of latitude is permissible, and even desirable, the pettifogging methods sometimes adopted lead to the obscuration of important conclusions. The real medical expert, possessing absolute knowledge and having the courage of his convictions, generally, however, has little difficulty in bringing about the discomfiture of an ignorant or ill-bred attorney. For these abuses the legal profession has some responsibility; perhaps an equal share with the medical. So long as corrupt lawyers are ready to purchase corrupt medical testimony, this will be in the market; and so long as there is a debased moral sentiment in the community, just so long can this traffic go on without exciting severe criticism. Still, these flagrant lapses from correct and scientific conclusions, presented for the instruction of the court, are by no means all, or even in the majority of instances, the result of corrupt barter. Ignorance, much more frequently than venality, misleads the court and tends to the miscarriage of justice. This ignorance may show itself in many places: for instance, at the fountain-head, imperfect observations of witnesses of fact. Another and frequent cause of the failure of medical expert-testimony is the reaching of improper conclusions by experts. This may be due to their lack of general or special training in the field of the problem at issue, to their lack of experience in the particular subject matter under discussion, to their lack of the reasoning power required to deduce a proper conclusion from the premises established, or to their failure to observe a just perspective. The last cause of the discredit of medical expert testimony presented is the char-

acter of the juries frequently found in the courts. The crass ignorance of some juries is the despair alike of the bench and bar, and even more so of the conscientious, scientifically trained, and experienced expert; for the placing before such men of the results of years devoted to the investigation and practice of a subject upon which he speaks with absolute authority, while presenting his conclusions in a way which should be readily comprehended by a person of average intelligence, is simply casting pearls before swine. The reason for the incompetence of juries is to be found in the fact that such a large number of citizens who would make capable jurors are excluded from such service either by law or by act of the judiciary.

Such being the conditions, Dr. Wilcox proposes the following remedies: 1. In order that the conclusions reached by medical experts shall be just and fair, they should be based upon the facts as determined by competent examination. 2. The hypothetical question should be based upon proven facts, contain nothing but these facts, and be presented in the form of a brief. 3. Medical experts should be experts only, and not enter into the controversy in any other guise. 4. The medical expert should make a personal investigation of the symptoms and conduct a physical examination of the persons involved in litigation. If this is impossible there should be a preliminary consultation by the medical experts of both parties to the question at issue (Leeds' method). If either of these plans is impossible the medical expert should hear in court all the evidence presented, and formulate his opinion upon the official record, and upon that alone. 5. Champerty should be forbidden to the medical expert, as well as to the medical counsel, precisely as it is to the legal counsel. The method by which such remedies can be obtained has been discussed for many years, he says, with but indifferent success. Legislation, as might have been expected, has failed, as have the single and conjoined efforts of both bar associations and medical societies. He believes that the bench, without additional legislation, can do much to improve the quality of medical expert testimony. An experienced judge can accurately estimate the value of testimony and the credibility of a witness. If alert and decided, he can largely obviate such scandals as have marked the trial of many important cases, excluding incompetent and irrelevant testimony, keeping counsel within bounds in cross-examination, and shortening the duration of the cases. As he finally decides upon the eligibility of a juror, so also should he pass upon the qualifications of medical experts; it is well within the province of the bench to insist that they shall not be mere specialists, but shall have acquired a position of eminence in their profession and be competent to speak with authority.

Believing the definitions of eminence and authority set forth by the regents of the University of the State of New York to express the qualifications which the medical expert should possess, if he is to further the ends of justice, Dr. Wilcox formulates these concretely, in order that there may be a standard: 1. He must have been graduated from a college of good standing, maintaining rigorous methods in the granting of degrees. 2. He must have been graduated from a medical school of good equipment, with control of adequate clinical facilities, and which maintains a thorough course of instruction, to which are added severe tests for the granting of degrees. 3. He should have been engaged in the practice of medicine and surgery, as a general practitioner, for at least ten years. 4. He should have been engaged in special study and practice for at least five years, either in laboratory investigation or hospital practice. Finally, these qualifications must have been recognized by the holding of a teaching position in a medical school of recognized standing, by the authorship of a work of acknowledged value, and by membership in exclusive societies devoted to the investigation of a special branch of medical science. If, he says, the bench will insist upon these qualifications as a minimum, we shall have as medical experts mature men of trained mind, of broad general medical experience, and of excellent special knowledge, whose eminence and authority could not be questioned; and the unfortunate results of medical expert testimony, due to ignorance and incompetence, which comprise the greater portion, would be entirely prevented. It is to the bench that we look for the remedy of a notorious abuse.

YALE MEDICAL WORK IN CHINA.

IT has been a source of pleasure heretofore to call attention[1] to the work of American universities in medical lines in China. The establishment in China of academic and medical schools,

[1] Edit. March 26, 1914, p. 468.

hospitals and medical research institutions by university men of America is a distinctly modern and typically American line of social service which is receiving increasing attention. It represents the finest sentiment and is a step toward realizing the soundest aspirations of university medical men in this country. Such institutions, unfettered by restrictions of creed or dogma, but broadly Christian and in the broadest sense missionary, serve a three-fold purpose. They furnish to China when the opening is peculiarly favorable, the best of western medicine and medical education. They afford a unique opportunity to American university men and women to exercise a truly statesmanlike philanthropy, along lines in which all can join, irrespective of creed or lack of creed. Finally they maintain institutions capable of the greatest scientific productivity along most practical lines.

Such is the nature of the Changsha Yale Hospital, which is allied with the Yale College in China, at Changsha, the capital city of Hunan Province in Central China. This institution, founded ten years ago, was the pioneer of its kind, and the idea has proved so worthy and productive that it has spread to other universities besides Yale. In its location the Yale Hospital is peculiarly fortunate. It is on one of the southern tributaries of the Yangtze River, in latitude 28 degrees, about even with Tampa, in a city of near a half million people, the capital of a province with twenty-two millions. No other medical center is nearer than Hankow, two hundred miles away. The location and climate furnish in Changsha a rich and virgin field for research in tropical and general medicine, together with the wealth of clinical material always available in a Chinese city of this size and importance.

The Yale Hospital is supported by an incorporated society of Yale alumni and faculty at New Haven, with a strong medical advisory committee, including many of the most prominent physicians and surgeons in the United States. The hospital staff numbers three house physicians, and an attending staff of two American and two Chinese with American and English training. Two hospitals are maintained for men and women respectively, and in each is a nurses' training school under the supervision of two American registered nurses. Fully equipped clinical and research laboratories are in operation.

Figures stating total numbers treated in clinic and hospital are not of special value in themselves. It is of interest, however, to note that in the year ending March 31, 1914, the women's hospital alone with less than fifty beds, received 320 in-patients whose average stay in the hospital was 20.6 days, and that 15,550 out-patients were treated in the clinic. Tuberculosis in all forms is the commonest disease, closely followed by syphilis, typhoid, dysentery, and the usual variety also seen in America. In addition, the sub-tropical location is responsible for an excellent service in tropical diseases. Special studies are now being conducted on the incidence and control of kala azar, schistosomiasis, malaria and other parasitic affections. The ophthalmologic, surgical and gynecological services are particularly varied.

Hunan is a great mining province, and ninety miles from Changsha is the Ping Hsiang colliery, the largest in China, producing 2500 tons of coal per day. A recent investigation[2] by a member of the Yale Hospital staff showed an almost universal incidence of hookworm in the miners, and brought out certain sanitary features of the colliery as well as of the numerous native mines, which are decidedly favorable to the development of parasitic and epidemic diseases. A study of hookworm incidence in Changsha itself showed an infection rate of 11.6% in 120 unselected cases from various occupations. The field for productive research is limitless. At present the chief emphasis is on outlining the general incidence and significance of the more common and serious diseases.

The Yale Hospital at present is housed in native buildings in the center of the city. In another year, however, a new hospital of 120 beds will be completed on a campus outside the city wall. This new structure, to cost $200,000, will be among the best equipped for medical practice, research and teaching, in all Asia.

At the initiative of the Chinese, arrangements are being consummated for a modern school of medicine in Changsha, to be operated in cooperation by the Chinese and by Yale. The Hunan provincial government will furnish land, buildings, equipment and operating expenses. Yale will furnish the staff and conduct the institution. This plan has full approval and support from the Peking government. Never before has such a merger been effected and that the initiative should come from the Chinese is signifi-

[2] Reed, A. C.: Investigation of Hookworm Infection at the Ping Hsiang Colliery. To appear in London *Annals of Tropical Medicine, Far Eastern Review*, and elsewhere.

cant of their attitude toward Western medicine.

The medical work of American universities in China forms an interesting and pleasing chapter, not alone in the modern development of China, but equally in the social and scientific life of the medical profession of this country, and one which every physician can peruse with pride and advantage.

MEDICAL NOTES.

LEGISLATION ON TUBERCULOSIS.—Legislation dealing with tuberculosis has been enacted in forty-eight states and territories of the United States, according to a comprehensive bulletin on this subject published by The National Association for the Study and Prevention of Tuberculosis. Only in the states of Arizona, Idaho, Nevada, Wyoming, and Alaska, has the subject been given no legislative consideration. State tuberculosis sanatoria to the number of forty-two have been established in thirty-three different states. Special laws providing for the establishment of local hospitals by municipalities or counties have been passed in fourteen states. In thirty-four states, laws are in force providing for the reporting and registration of living cases of tuberculosis. In four states, New York, New Jersey, Wisconsin, and Minnesota, special laws have been enacted giving state and local health authorities power to remove and detain tuberculous persons who menace the health of their families or associates. Six states, Illinois, Iowa, Missouri, Minnesota, New York, and Texas, have laws which give the people the privilege of voting at general or special elections on the establishment of county or municipal tuberculosis hospitals. Massachusetts, Minnesota, New Jersey, Wisconsin, and Washington grant subsidies ranging from $3.00 to $5.00 per week to such local hospitals. Laws prohibiting spitting in public places have been enacted in more than twenty states.

THE STERILIZATION OF DEFECTIVES.—It has recently been held by the New Jersey Supreme Court that the statute in that state authorizing and providing for the sterilization of criminals, feeble-minded and other defectives is invalid on the ground that it was "based upon a classification that bore no reasonable relation to the object of such police regulation, and hence denied to the individuals of the class so selected the equal protection of the laws guaranteed by the Fourteenth Amendment to the Constitution of the United States. The artificial regulation of the welfare of society by means of surgical operations for the prevention of procreation, being based upon the suppression of the personal liberty of individuals, must be accomplished, if at all, by a statute extending to the persons thus injuriously affected such equal protection of the laws." (See page 19 *New York Medical Record*, July 4, 1914.) The United States District Judge of the Southern District of Iowa declared unconstitutional, and therefore null and void, the law passed by the last General Assembly of Iowa providing for the sterilization of criminals. This decision was based on the belief that the penalty was in violation of the Constitution that cruel and unusual punishment shall not be inflicted. (See *New York Medical Record*, page 23, July 4, 1914).

THE AMERICAN ROENTGEN RAY SOCIETY.—The American Roentgen Ray Society will meet in Cleveland at the Hotel Hollenden, on Sept. 9 to 12, inclusive, 1914. The program promises to be of unusual interest and value, and includes a paper by Dessauer, of Frankfort, on the subject of artificial production of gamma rays. Coolidge, the inventor of the Coolidge tube, Shearer and Duanne will also read papers. The subject of deep therapy and the production of the hard rays will be fully presented and discussed. The rest of the program will be taken up by a large number of papers on general subjects. The medical profession is cordially invited to attend these meetings.

A SERENE BRITISH CENTENARIAN.—Mrs. Rebecca Clark, who died on July 5 at Wood Green, London, is said to have been born in 1804. She is survived by three aged children and four grandchildren. Her recipe for longevity was "Never Worry."

A PARISIAN PYGOPAGOTOMY.—On May 22 a living pygopagus was born in Paris, and on July 16 the twins were successfully separated at the American Hospital. The sacra were found fused and the recta united for their distal inch. Both children are females and are reported to be doing well.

Antityphoid Inoculation in the Mexican Army.—Report from El Paso, Texas, on July 17 states that all officers of the northern division of the Mexican constitutionalist army, under General Villa, have received antityphoid inoculation. General Ortega has recently died of typhoid fever, and General Benevida is reported seriously ill with the disease.

Honorary Degrees for Physicians.—The Birmingham Medical College of the University of Alabama has recently conferred the honorary degree of M.D. on Dr. A. Richard Bliss, Jr., professor of chemistry and pharmacology at the university.

The University of Groningen, Germany, at the recent celebration of its tricentennial, conferred the honorary degree of M.D. on Sir Edward Schaefer, of Edinburgh, and Prof. J. N. Langley, of Cambridge, England.

Hamburg Laboratory for Tropical Diseases.—A laboratory for maritime and tropical diseases has recently been established in Hamburg, Germany, at a cost of 2,500,000 marks, and opened under the direction of Professor Nocht.

Viennese Institute of Medical History.—An institute for the history of medicine, recently established at the University of Vienna, has acquired within a year a library of 3000 volumes, and a large collection of letters, manuscripts and instruments.

Royal Society Research Endowment.—The Misses L. E. and M. W. Lawrence have recently given to the British Royal Society the sum of £4000, the interest of which is to be devoted to research into the causes and cure of disease in man and animals, in memory of Sir W. Lawrence, F.R.S., and Sir Trevor Lawrence.

Three Important European Medical Meetings.—During the current week, three important medical meetings are being held in Europe. The fifth annual session of the Clinical Congress of Surgeons of North America is in progress at London, under the presidency of Dr. George Emerson Brewer, Dr. John B. Murphy being the president-elect, and Sir Rickman J. Godlee the honorary chairman. The seventh International Congress of Electrology and Medical Radiology is in session at Lyons, France, under the presidency of Professor Renaut. The eighty-second annual meeting of the British Medical Association is being held, under the presidency of Sir Alexander Ogston, K.C.V.O., LL.D., at Aberdeen, Scotland. Further account of these meetings will appear in later issues of the Journal.

BOSTON AND NEW ENGLAND.

Middlesex East District Medical Society.—The Middlesex East District Medical Society was organized in 1850, and since that time has held monthly meetings regularly, save during the usual vacation periods. It now has 78 members.

Work of Milk and Baby Hygiene Association.—During the five weeks from June 13 to July 17, 1684 babies were receiving medical and nursing care at the twelve milk stations of the Boston Milk and Baby Hygiene Association. This is an increase of 393 babies, or thirty per cent., over the corresponding period in 1913. Attendance during this period at the well baby clinics, held weekly in the milk stations, was 2052 babies, an average of 32 for each clinic. A year ago, from June 12 to July 16, the attendance was 1408 babies, an average of twenty-six for each "baby conference."

A Centenarian.—Mrs. Barbara Maykel, who died on June 22 at Worcester, Mass., is said to have been born in 1810 in Syria.

Hospital Bequests.—The will of the late Matilda H. Crocker, of Brookline, Mass., which was allowed on July 22 in the Norfolk Probate Court at Dedham, Mass., contains bequests of $20,000 to the New England Hospital for Women and Children, and $250 to the Hospital Cottages for Children at Baldwinsville, Mass.

Chelsea Board of Health.—The recently published annual report of the board of health of Chelsea, Mass., records the activities of that body for the calendar year 1913. During this period the total death-rate, exclusive of non-resident deaths, was only 12 per 1000. A small epidemic of typhoid fever was traced to a carrier on a local milk farm. The reports of the health officer and of the inspector of milk and plumbing are appended.

Massachusetts Hospitals for Consumptives.—The recently published seventh annual report of the trustees of Massachusetts Hospitals for

Consumptives records the activities of that body and the work of the four state institutions under its charge for the year ended Nov. 30, 1913. During this period 323 new patients were admitted to the North Reading Sanatorium, 370 to the Lakeville Sanatorium, 273 to the Westfield Sanatorium, and 449 to the Rutland Sanatorium. There is a waiting list of over 200 applicants for admission, enough to fill another institution of similar size. New local tuberculosis hospitals have been built in Chicopee, Fitchburg, Haverhill, Pittsfield, and Salem.

BROCKTON HOSPITAL AND BOARD OF HEALTH.—The recently published 18th annual report of the Brockton (Mass.) Hospital records the work and progress of that institution for the calendar year 1913. During this period 1,024 patients were treated in the wards and 297 in the out-patient department, with a mortality of 6.6%. There were 48 obstetric cases, and 7 nurses were graduated from the training school. There is urgent need of increased house accommodation for patients and nurses, and for enlargement of the quarters of the maternity and out-patient departments.

The Brockton Health Department, in its effort to reduce the amount of endemic venereal disease, has recently sent the following circular to all physicians in that city:—

"This department, being of the opinion that venereal diseases are infectious, communicable and preventable, and constitute a serious menace to the public health, has decided to furnish facilities for aid in the diagnosis and treatment of such diseases.

"As venereal diseases have not as yet been placed in the list of diseases required by the State Board of Health to be reported, this board will not require local physicians to furnish the names and addresses of patients; and, on the other hand, owing to the expense of installing the facilities for such tests, it will be necessary to make a merely nominal charge for the service rendered.

"The facilities furnished will comprise: first, the Wassermann test for diagnosis of syphilis, in which a positive reaction is now generally accepted as evidence of luetic infection and an indication of necessity of specific treatment; and, second, the complement fixation test for chronic gonorrheal affections, which is highly useful as a method of differential diagnosis between the various pathological conditions following an acute attack of gonorrhea and similar conditions due to other causes.

"A special private room has been equipped at the laboratory of the department for collecting the blood of patients sent for that purpose by the physicians of this city. This will be done on Mondays and Tuesdays only, between the hours of 10 a. m. and 5 p. m., beginning the third Monday in June (June 15), 1914.

"For those physicians who may desire to obtain the blood from the patients themselves an outfit will be supplied upon request at the office of the board of health. As this outfit is more expensive than the ordinary bacteriological specimen outfit, a charge of twenty-five cents will be made for each outfit supplied. For the making of the tests an additional charge of two dollars will be made. If the patient is sent to the laboratory, as noted above, no charges for the outfit will be made. When the diseases are placed upon the reportable list our charge for the test will at once be discontinued."

CASES OF INFECTIOUS DISEASES reported to the Boston Board of Health for the week ending July 21, 1914, are as follows: Diphtheria, 47, of which 1 was non-resident; scarlatina, 23, of which 3 were non-residents; typhoid fever, 3; measles, 50, of which 1 was non-resident; tuberculosis, 41, of which 1 was non-resident.

The death-rate of the reported deaths for the week was 12.71.

NEW YORK.

MORTALITY STATISTICS.—The weekly reports of the health department show that during the month of June the mortality represented an annual death-rate of 11.97, as against 12.75; 14.67 in May and 12.45 in June, 1913. In practically all diseases,—an unprecedented circumstance,—there was a decrease in fatality. The weekly average of deaths from typhoid fever declined from 6.75 in May to 4.75 in June; the weekly average from measles, from 24.75 to 19; from scarlet fever, from 16 to 10.5; from whooping-cough, from 6.75 to 5.25; from diphtheria and croup, from 38.25 to 27.25; from influenza, from 3 to 1.25; from epidemic cerbrospinal meningitis, from 8 to 7; from pulmonary tuberculosis, from 180.5 to 169; from pneumonia, from 113 to 72.75; from broncho-pneumonia, from 110.25 to 81.5; from tuberculous meningitis, from 20.25 to 17.25; from cancer, from 91 to 80; from apoplexy and softening of the brain, from 22.5 to 15.25; from organic heart diseases, from 213.25 to 142.75; from diarrheal diseases under five years, from 42.75 to 37; from appendicitis and typhilitis, from 15.25 to 13.25; from hernia and intestinal obstruction, from 11 to 10.25; from cirrhosis of the liver, from 15.75 to 12.75;

from Bright's disease and acute nephritis, from 117.25 to 114.75; and from puerperal diseases, from 14.25 to 12.25.

Microscopical Diagnosis of Cancer.—A few weeks ago the City Health Department was asked by the American Society for the Control of Cancer to take into consideration the provision of laboratory facilities for the microscopical diagnosis of cancer. The department did this, but in view of the fact that the State Institute for the Study of Malignant Disease, at Buffalo, is already equipped for this work, decided to take no action in the matter. In a communication addressed to Commissioner Goldwater, Dr. Harvey R. Gaylord, director of the institute, has writtten: "There is no special obligation laid upon this institute by any enactment to undertake the diagnosis of all cancer cases in the state, but we are perfectly willing and desirous of so doing, and would be glad to diagnose all cases from the city of New York sent here. It is probably true that the practitioners of the state do not generally understand that the institute is prepared to diagnose material, and doubtless none of the physicians of New York City are aware of the opportunity."

Smoke Ordinance.—The Court of Special Sessions, County and Borough of the Bronx, has recently rendered a very important decision involving a violation of Section 181 of the Sanitary Code, commonly known as the "smoke ordinance." The Department of Health instituted a criminal action against the New York, New Haven and Hartford Railroad Company, charging a violation of this ordinance, in that the company allowed dense smoke to be discharged from its locomotives in the borough of the Bronx; and the court found the defendant guilty and affixed the maximum penalty,—a fine of $500. This is the first conviction of the kind obtained against a railroad company since the Appellate Division of the Supreme Court reversed the decision in the New York Central case, and in the action which it took the court has determined that the evidence submitted by the Health Department met all the conditions imposed by the Appellate Division. In deciding as it did, the court holds that the defendant was making an unreasonable use of its premises, a view which sustains the contention of the department in every respect; and the department is now in a position to take drastic action in like cases throughout the city.

Social Betterment.—Seventy years of social betterment under the most difficult conditions of modern city life are summarized in the last annual report of the New York Association for Improving the Condition of the Poor. In the beginning of its existence, the lame, the halt, the blind, the sick and infirm, the defectives, idiots and insane, and often the criminals, were herded together, amid the most debased and debasing surroundings, in the county almshouses. Little better off were the tenement-house poor in their wretched, unsanitary, dark and dirty quarters, —no running water, no sewage, no drainage,— streets filled with filth, and pigs the only scavengers; epidemics of smallpox, yellow fever and cholera; no organized system for supplying the indigent sick with medical aid, nothing done to prevent or stamp out disease; children growing up in ignorance, profligacy and crime, and no systematic measures for their rescue or protection; no thought taken for infants, the milk supply coming from herds of cows huddled together in filthy pens and subsisting on swill from the breweries. In the midst of such surroundings the association came into being, and immediately after its inception began to devise far-reaching plans for improving social conditions. It conducted extensive and thoroughgoing investigations, marshalling facts in a striking and convincing manner; it called the attention of the public to the wretched sanitary conditions of the tenements, pointing out how they affected the occupants injuriously; it began the first organized effort in the city to improve public health; it organized a system for supplying the indigent sick with medical aid and a propaganda for sanitation and hygiene; it devised a plan to protect the community against cholera; it projected improvements in the city's markets; it established a hospital for crippled children; it brought to public notice the great number of children growing up in ignorance and crime; it promoted legislation to provide for the care of truant children; it stimulated the organization of societies like the Children's Aid Society; it secured the passage of an act to prevent milk adulteration and the traffic in impure and unwholesome milk; it carried on a warfare against slaughter houses and bone-boiling establishments as dangerous to public health; it projected the Juvenile Orphan Asylum and founded the De Milt and Northwestern Dispensaries; and it started the first model dwellings,

including the first tuberculosis home hospital, the "East River Homes."

BEQUEST TO FOUND HOME FOR AGED.—By the will of the late Miss D. Louise Shipley of Peekskill, N. Y., the principal of her estate, amounting to about $100,000, is left to the Associated Charities of Peekskill to found a home for the aged, to be known as the Shipley Memorial.

Current Literature

MEDICAL RECORD.

JUNE 27, 1914.

1. VAUGHN, V. C. *The Service of Medicine to Civilization.*
2. COLEMAN, W., AND HARTWELL, J. A. *Splenectomy for Pernicious Anemia. Report of a Case.*
3. MAYER, E. *Primary Lupus of the Larynx.*
4. BALLARD, I. W. *Arterial Hypertension: Its Clinical Significance and Latter Day Treatment.*
5. COOPERNAIL, G. P. *Varix of the Internal Saphenous Vein Resembling a Strangulated Femoral Hernia.*

JULY 4, 1914.

1. BACON, G. *Laboratory Aids in the Diagnosis of Acute Mastoid Diseases Due to Acute Purulent Otitis Media.*
2. FISHBERG, M. *Sources of Error in the Diagnosis of Pulmonary Tuberculosis.*
3. KOLIPINSKI, L. *William Withering and His Book on the Foxglove.*
4. BLOCK, S. *Psychological Aspects of the Relation of Divorce, Accidents, Crime, etc., to Mental Defects.*
5. TWEDDELL, F. *Cause and Prevention of Pyorrhea Alveolaris and Furunculosis.*
6. *BERLIN, W. C. K. *Arterial Hypertension: Its Relation to Arteriosclerosis and Bright's Disease.*
7. GARDINER, J. *Wound Healing with the Aid of Vaccines.*

6. Berlin believes that arterial hypertension, arteriosclerosis and Bright's disease are entirely independent of each other. Hypertension is always due to toxemia, arteriosclerosis may be caused by altered metabolism or by toxemias, while Bright's disease is always due to infection. The writer reports six cases in support of his contention. [L. D. C.]

JULY 11, 1914.

1. *WRIGHT, B. L. *The Treatment of Diseases of Vegetable Parasitic Origin by Deep Muscular Injections of Mercury.*
2. BISSELL, J. B. *Some Radium Therapeutics.*
3. TITUS, E. W. *Cow's Milk, Raw and Heated.*
4. KAEMPFER, L. G. *The Pharyngeal Tonsil in the Adult.*
5. BRYANT, W. S. *Modified and Conservative Radical Mastoid Operations for Tolerance of Prostheses in Cases of Diminished Hearing after Middle Ear Suppuration.*
6. NEUHOF, S. *A Case of Auricular Flutter Occurring During Rheumatic Endocarditis.*
7. FRAZER, T. *Mental and Nervous Manifestations of Pellagra.*
8. GOLDSTONE, K. H. *The Physiology of Abderhalden's Test, Its Value in the Determination of Pregnancy, with a Table of Ninety Cases.*

1. Wright reports further clinical experiments with intramuscular injections of mercury in tuberculosis and in several other diseases of vegetable parasitic origin,—pneumonia, typhoid fever, meningitis, erysipelas, articular rheumatism and gonococcus arthritis. His results confirm his theory that mercury is the chemical affinity of the tubercle bacillus and probably of all the vegetable parasites. Injection of this affinity into the host will promptly cure the disease caused by the specific parasite, the action being represented by this formula: (Vegetable antigen + Hg) + antibody + complement = complement fixation (cure). Mercury should be given in the largest dose possible at the earliest possible moment after onset of the disease. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

JULY 11, 1914.

1. CRANDALL, F. M. *The Treatment of the Summer Diarrheas of Children.*
2. THOMAS, T. T. *Obstetrical Paralysis.*
3. *LYDSTON, G. F. *Transplantation of a Testicle from the Dead to the Living Body.*
4. MAYS, T. J. *A Plea for Saner Methods in the Treatment of Pulmonary Consumption.*
5. GOODHART, S. P. *Myasthenia Gravis.*
6. SANFORD, C. H., AND FITZSIMMONS, H. *A Combined Fracture and Orthopedic Operating Table.*
7. DEFOREST, H. P. *Hygiene of Nutrition.*
8. GEYSER, A. C. *The Physiological Treatment of Catarrhal Deafness.*
9. BLAUNER, S. A. *Hereditary Cerebellar Ataxia.*
10. CHERRY, T. H. *Hourglass Contraction of the Uterus Following the Use of Pituitary Extract.*

3. Lydston presents a preliminary paper on sex gland hormone therapy, reporting a case in which extensive psoriasis disappeared in eight days after implantation in the scrotal sac of a testicle removed from a healthy subject killed forty hours previously by an electric shock. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

JULY 11, 1914.

1. SUTTON, R. L. *The Future of Dermatology in America.*
2. *OPIE, E. L., AND ALFORD, L. B. *The Influence of Diet on the Toxicity of Substances which Produce Lesions of the Liver or the Kidney.*
3. WILE, U. J. *The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System. Report of Cases.*
4. *LOWDERMILK, R. C. *Hay-Fever.*
5. *HARTWELL, H. F. *The Isolation of Spirocheta Pallida from the Blood in Syphilis.*
6. SAPPINGTON, S. W., AND PEARSON, W. A. *The Leukemias under Benzol. A Report of Three Cases with a Metabolism Study of an Acute Leukemia.*
7. *HENES, E., JR. *The Value of the Determination of the Cholesterin Content of the Blood in the Diagnosis of Cholelithiasis. Preliminary Report.*
8. BOORSTEIN, S. W. *Dystrophia Adiposo Genitalis (of Froehlich) with Clinical Reports of Two Cases.*
9. JERVEY, J. W. *The Influence of Hookworm Disease on the Eyes. A Study of Fifty-Three Cases.*
10. ILL, E. J. *The Treatment of Albuminuria in Pregnancy.*
11. RONGY, A. J. *Treatment of the Toxemias of Pregnancy.*
12. STANLEY, C. *Mold Fungi, Streptothrix Foersteri, Recovered from the Gastric Contents.*

2. The authors conclude as follows: The toxicity of phosphorus, which causes fatty degeneration of the liver, is greater in animals which have received a diet of meat than in those which have had diets consisting in large part of carbohydrates or of fat. Animals on a diet rich in carbohydrates are much less susceptible to nephritis produced by potassium chromate and uranium nitrate than animals on a diet consisting of meat or of fat. A diet of meat increases the toxicity of potassium chromate, which produces necrosis of the convoluted tubules of the kidney, and a diet of fat increases the toxicity of uranium nitrate, which alters the loops of Henle and produces nephritis.

4. Lowdermilk describes the preparation of his hay fever toxin, its dosage and administration. He had 16 cures out of 19 cases.

5. Hartwell, using the blood of early cases of syphilis, injected into rabbits' testicles, shows that the spirocheta pallida invades the peripheral blood at an early stage and shows syphilis as a chronic septicemia and that the blood stream is invaded at an early stage, even before the skin manifestations are evident.

7. Henes finds that almost all gall-stones are formed largely, if not entirely, of cholesterin. A hypercholesterinemia seems to be the fundamental and primary etiologic factor in the formation of gall-stones, and this condition of the blood is easily determined. In cases of cholelithiasis without fever, a hypercholesterinemia is invariably found. Conditions simulating cholelithiasis can be differentiated therefrom by a cholesterin-serum determination. This applies particularly in differentiating duodenal ulcer. This hypercholesterinemia or cholelithiasis persists for a considerable length of time after the operative removal of the stones. The author states, with reservation, that operation without removal of the gall-bladder does not free the patient from the possibility of subsequent stone formation. [E. H. R.]

BULLETIN OF THE JOHNS HOPKINS HOSPITAL.

JULY, 1914.

1. *SLEMONS, J. M. *The Involution of the Uterus and Its Effect upon the Nitrogen Output of the Urine.*
2. BROWN, T. R. *The Normal Amount of Diastatic Ferment in the Feces and Its Variation in Certain Diseases of the Pancreas and in Achylia Gastrica.*
3. *MANN, F. C. *The Peripheral Origin of Surgical Shock.*
4. BROWN, T. R., AND SMITH, C. W., JR. *The Normal Diastase Content of the Urine.*

1. Slemons finds that the process of uterine involution causes a rise in the urinary nitrogen and that the amount of excessive elimination corresponds to the nitrogenous content of the non-involuted uterus.

3. Mann finds it impossible to produce shock in anesthetized animals by any external sensory stimulation; shock is not due to acapnia, nor to any respiratory disturbance, nor to primary failure of the heart, or cardiac mechanism. It is possible to produce shock by use of excessive heat or cold. The easiest and most certain way to produce shock is by handling the viscera. The cause of shock is the loss of red cells and fluid from the blood. The paper represents an immense amount of work and is worthy of careful study. [J. B. H.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

JULY, 1914.

1. *TOREK, F. *Interpleural Pneumolysia. An Operative Procedure in Pulmonary Tuberculosis.*
2. MOORE, J. E., AND CORBETT, J. F. *Studies on the Function of the Periosteum.*
3. *HENZE, C. W., AND MAYER, L. *An Experimental Study of Silk-Tendon Plastics, with Particular Reference to the Prevention of Post-Operative Adhesions.*
4. *CURTIS, A. H. *On the Pathology and Treatment of Chronic Leucorrhea.*
5. BRATRUD, T. *Intestinal Polyposis with Report of Case with Three Intussusceptions.*
6. CHETWOOD, C. H. *Pyonephrosis.*
7. BARRIE, G. *Hemorrhagic Osteomyelitis.* HILLMAN, O. S. *With Observations on Its Pathology.*
8. STRASSMANN, P. *The Prevention and Treatment of Pelvic Adhesions.*
9. SEIFERT, M. J. *Arteriovenous (Varicose) Aneurysm of the Deep Epigastric Artery and Vein.*
10. MERRILL, W. J. *Tarsalgia.*
11. SPEED, K. *A Discussion of Pott's Fracture with Complications; Based on a Series of Two Hundred and Eight Cases.*
12. NAGEL, W. *Placenta Previa and Its Treatment.*
13. SQUIER, J. B., AND HEYD, G. G. *An Operative Technic for Radical Extirpation of Vesical Neoplasms.*
14. REDER, F. *Remarks on the Surgery of the Ileocecal Coil.*
15. BECK, J. C. *The Evolution of the Tonsil and Adenoid Operation, and a Description of the Writer's Method of Procedure.*
16. FREEMAN, L. *The Use of the Wire Tourniquet in Operations for Goiter.*
17. BRYAN, W. A. *Two-Time Treatment of Encysted Peritoneal Abscesses.*
18. MARSHALL, V. F. *Autogenous Fascial Transplantation.*
19. SWENSON, C. G. *Demonstration of a Universal Extension Apparatus Applied to a Surgical Bed.*
20. FREIBERG, A. H. *A Modification of Abbott's Frame for Applying Scoliosis Jackets.*
21. HANAN, J. T. *Sliding Splint of Plaster of Paris for Fractured Femur.*
22. UNDERHILL, A. J. *Dilatation of an Otherwise Impassable Stricture by the Retrograde Passage of a Filiform Guide.*

1. Torek describes his operation of pneumolysia for producing collapse of the diseased lung by freeing of intrapleural adhesions in such cases as are not suitable for nitrogen introduction. He illustrates by one personal case.

3. This excellent and very thorough article is a very exhaustive study of the use of silk tendons. The authors claim that the only reasonable way to prevent adhesions is to run the transplanted tendon through the sheath of the paralyzed. All efforts by interposing living tissues or foreign bodies defeat their own end by exciting adhesions. The one possible exception is Cargile's membrane.

4. Curtis feels that direct treatment of the endometrium in chronic leucorrhea can be dispensed with. In unusual cases dilatation for drainage, possibly aided by topical applications, is logical treatment. Curettement of the uterine cavity, douches, and tampons are probably harmful. Purulent discharges originate, as a rule, in the lower genital tract. Autogenous vaccines may be of distinct value in certain cases. [E. H. R.]

THE LANCET.

JUNE 20, 1914.

1. SHUFFLEBOTHAM, F. *The Milroy Lectures on the Hygienic Aspect of the Coal Mining Industry in the United Kingdom. Lecture II.*
2. ROBINSON, H. B. *Calculi in the Common Bile Duct; Transduodenal Choledochotomy.*

3. FRASER, M. H. *Notes on Two Cases of Veronal Poisoning.*
4. LITTLE, E. M. *Boots and Shoes from Historical and Surgical Point of View.*
5. TREDELL, C. E., AND THOMPSON, R. *Three Cases of Malignant Growth at the Base of the Bladder Treated by Diathermy.*
6. URGMAN, C. W. *Angeioma in Cerebellar Peduncle; Fatal Intracranial Hemorrhage.*
7. BRODRIBB, A. W. *A Case of Septicemic Purpura.*
8. SEHEULT, R. *Report of Three Cases of Advanced Extra-uterine Pregnancy.*
9. EVERIDGE, J. *A Case of Non-Parasitic Cyst of the Liver.*
10. HULL, A. J. *The Transport of Wounded in War.*

JUNE 27, 1914.

1. SHUFFLEBOTHAM, F. *The Milroy Lectures on the Hygienic Aspects of the Coal Mining Industry in the United Kingdom. Lecture III.*
2. *COURTNEY, J. B. *The Treatment of Leprosy by Intravenous Injections of Iodoform.*
3. GRANT, J. W. G. *Some Cases of Traumatic Hysteria.*
4. LEGGETT, W. *Mental Symptoms Associated with Exophthalmic Goitre.*
5. SANDESON, A. *A Case of Fibrosis of Lung Treated with Bacillus Friedländer Vaccine.*
6. PYBUS, F. C. *A Case of Acute Non-Calculous Cholecystitis in a Child.*
7. WICKENDEN, S. *A Case of Gall-stone Causing Intestinal Obstruction.*

2. Courtney reports good results in treating leprosy by intravenous and local injections of iodoform. He urges further trial of this method. [J. B. H.]

BRITISH MEDICAL JOURNAL.

JUNE 20, 1914.

1. *WEST, S. *On the Murmurs in Dilated Hearts and Their Examinations.*
2. *PRICE, F. W. *Common Errors in Diagnosis and Treatment of Cardiac Diseases.*
3. *SYMES, W. L. *On Tincture of Digitalis (B. P.): Its Activity and Stability.*
4. GOSSE, A. H. *A Case of Acute Rheumatic Heart Block.*
5. BRADDON, W. L., AND COOPER, E. A. *The Influence of the Total Fuel-Value of a Dietary upon the Quantity of Vitamine Required to Prevent Beri-beri.*
6. COBB, I. G. *A Case of Hypothyroidism in a Male.*
7. TURNBULL, A. *Cerebral Cyst Without Localizing Symptoms.*
8. RENTON, J. C. *Notes of a Case of Contraction of the Upper and Lower Limbs after Still's Disease.*

1. West first considers the conditions under which murmurs occur in dilated vessels, arteries and veins, taking up fusiform dilatation, which he calls "mimic aneurysms," true fusiform aneurysms, and saccular aneurysms. The second group of conditions which may cause the eddies necessary for the murmur is that in which the vessel is constricted, leaving a dilatation, relative or absolute, above and below. This may be due to external pressure or disease of its walls. In the heart conditions similar to the above may exist. Such murmurs are called basic or ventricular. The basic murmurs are generally called "hemic" or "functional," both of which terms West considers to be bad ones. He discusses these murmurs in detail. He then takes up the more important group of ventricular murmurs. These are either left sided or mitral or right sided or tricuspid. He is of the opinion that such murmurs are not valvular or regurgitant, but are really due to eddies within the dilated ventricles.

2. Price discusses in an interesting and instructive article, rheumatic infection of childhood and the various forms it takes, cardiac irregularity and its significance, the need of more careful study of the symptoms of cardiac disease, and particularly that the natural standard of cardiac strength varies in each individual and that symptoms of cardiac disease may arise from extrinsic or temporary causes such as anemia, lack of exercise, etc. He then discusses various fallacies in treatment, particularly as to the use and abuse of digitalis.

3. Symes finds that few tinctures of digitalis are initially below standard but that initially they may vary 200-300%. All such tinctures undergo constant deterioration. Commercial non-alcoholic tinctures are not trustworthy. [J. B. H.]

JUNE 27, 1914.

1. ELLIOTT, T. R. *The Sidney Ringer Memorial Lecture on the Adrenal Glands.*
2. *WHIPHAM, T. R. C. *An Address on Some Clinical Aspects of the Body Temperature in Childhood.*
3. *HURRY, J. B. *The Vicious Circles of Neurasthenia.*
4. *PICKERELL, H. P. *Internal Secretions and Dental Caries: with Special Reference to Thyroid Insufficiency.*

2. Discussing body temperature in childhood under various conditions, Whipham takes up sick normal temperature and its cause, and fevers due to (1) intestinal toxemia of bacterial origin or due to improper food, (2) general toxemias (bacterial), (3) auto-intoxication, and (4) obscure causation, such as muscular activity, reflex irritation, etc. He gives some practical points on treatment.

3. Hurry takes up in terse and diagrammatic style, the various vicious circles in neurasthenia and how they may be broken by psychotherapy and constitutional and local treatment.

4. Pickerell believes that there is some evidence to show that deficiencies of secretions of the thyroid and perhaps of the pituitary and thymus glands are concerned in the lowering of the tissue resistance to dental caries. [J. B. H.]

THE INDIAN MEDICAL GAZETTE.

JUNE, 1914.

1. HOLLAND, H. T. *Observations on a Thousand Cataracts Performed in Six Weeks at Shikarpur, North Sindh.*
2. BAIRD, R. *Two Years' Experience of Extraction of Cataracts in the Capsule, with Notes on Eleven Hundred and Thirty-Seven Consecutive Operations.*
3. NEWMAN, E. A. R. *Irrigation after Extracapsular Extraction of Cataract.*
4. MILNE, C. *The Thyroid Gland and Some Cases of Hypothyroidism.*
5. CADDY, A. *A Few Notes on the Presence of Catarrhal Jaundice in Calcutta.*
6. HAMMOND, F. A. L. *A Case of Ruptured Spleen; Splenectomy; Recovery.*
7. GOSAIN, C. L. *A Case of Rupture of the Spleen.*
8. MADDOCK, C. *Notes of Cases Treated in the Ripon Hospital, Ahmednagar.*
9. WILSON, F. E., AND BARBER, C. H. *Peritoneal Cyst of Traumatic Origin, and Other Cases.*
10. FRANKLIN, G. D. *A Case of Simple, Non-Infective Thrombosis.*
11. WALKER, W. O. *An Interesting Case of Psoas Abscess Treated by Injections of Pneumococcal Vaccine.*

EDINBURGH MEDICAL JOURNAL.

JULY, 1914.

1. *DUNLOP, H. G. M. *Empyema in Children.*
2. HART, D. B. *A New Route of Inquiry as to the Nature and Establishment of the Typical Sex-Ensemble in the Mammalia. I.*
3. *MCNEIL, C. *Anaphylaxis and Status Lymphaticus. Their Relation to Intensified Types of Disease in Infancy and Childhood. I.*
4. GRIEG, D. M. *Recurrent Luxation of the Patella.*
5. LEA, C. E. *Dr. Thomas Spens: the First Describer of the Stokes-Adams' Syndrome.*
6. KERR, C. *Case of Chronic Primary Pneumococcal Cerebrospinal Meningitis.*

1. This is based on 98 cases of empyema occurring in 861 cases of pneumonia in children. The younger the child the more purulent the fluid. Pneumococcus was the infecting agent in 53% and lobar pneumonia the cause in 69%. The signs and symptoms are discussed in detail. Purulent pericarditis was the commonest complication, being present in 40%. Diagnosis is often very difficult, displacement of the heart being the most important sign. There was a mortality of 19% in this series. Treatment is to remove the pus at once.

3. McNeil, in this first paper, discusses the proposition that those abnormal types of illness which we term "fulminant" are clinical illustrations of anaphylaxis; that status lymphaticus is a form of anaphylaxis, and that other fulminant types of illness in young people may be anaphylactic, and also explained by abnormal constitution. These difficult subjects he takes up in detail. [J. B. H.]

Miscellany.

MEDICAL EDUCATION IN CHINA.

THE Rockefeller Commission, which has been recently investigating medical education in China, finds that it is of extreme importance to teach the Chinese to treat themselves and not to rely altogether upon foreign physicians.

"The commission, which is represented at Pekin by Dr. Harry Pratt Judson, president of the Chicago University, and Dr. Francis W. Peabody of Boston, has not gone far enough to commit itself to any definite project, but its report undoubtedly will be largely concerned with the problem of making the foreign trained native physician respected in China.

"The American state department has temporarily detached Roger S. Greene from his consular post at Hankow to aid the commission as an interpreter and guide on its tour of investigation, and the Chinese government, both central and local, has furthered, rather than impeded, the work of the commission.

"The country is so vast and the need of medical men so extensive that all the physicians and surgeons in America could be utilized in China. Such a great invasion, or even enough to make any wide impression, is impracticable. The solution must be the training of the Chinese physicians. At present there are only a few score of them trained along modern lines, and these have difficulty in making a living. The Chinaman is suspicious of the second-hand training of the modernized Chinese physician, and if he is moved to resort to foreign treatment he prefers to go direct to the foreign physician.

"It was only three years ago that the first class of Chinese educated in China took their medical degrees from the Union College (where American and British missionaries work together), in Pekin. Last year in the first class a small number of women physicians graduated. Because of prejudices against the treatment of women by men, women physicians will have a valuable place in medical work in China. While the class of Chinese who prefer the old-style physician is still in the majority, the foreign physicians have more than they can do."

In another column of this issue of the JOURNAL is published an editorial description of the work of the Yale Medical School at Changsha; and the work of the Harvard Medical School at Hongkong was editorially described in our issue of March 26, 1914. These two institutions have already well begun in China the medical education whose extensive need among the people is emphasized by the findings of the Rockefeller Commission.

Correspondence.

PARIS LETTER.

THE MEDICAL ATMOSPHERE OF THE RENAISSANCE, AS PORTRAYED IN SOME EARLY FRENCH WRITERS.

3. MICHEL DE MONTAIGNE.
(1570–90, Circa.)

(From Our Special Correspondent.)

PARIS, FRANCE.

"Mon livre ne contient autre chose qu'un discours de ma vie et de mes actions."

Mr. Editor: This reply, made by Montaigne to Henry the Third, on the latter's expressing a favorable opinion of his writings, is unfortunately only too true. The edition of his essays that I possess is in three volumes, about 1600 pages, and most of it concerns the author! Try as he will, and wander as far afield as he may (mes fantasies se suyvent, mais parfois c'est de loing!), it proved impossible for him to keep long away from himself. There is only one other writer that I know to equal him, Pierre Loti; both of these authors maintain their own person constantly and conspicuously in the foreground, and both are only really interesting when writing about themselves.

It is customary to think of Montaigne as a patrician, living on an estate in the country, and passing his leisure time in writing philosophic essays with a skeptical tendency. The facts, however, are that his great-grandfather was an ordinary dealer in salt fish in Bordeaux, while his mother was a Jewess of Spanish origin. The latter detail may account for a great deal in Montaigne. It is a known fact that the offspring of such mixed marriages, from the crossing of breeds as it were, are not unlikely to be superior in intellect to the people about them, and in this par-

ticular the Israelitic strain would be a distinct asset; but it is also well-known, and I was quite surprised to learn that attention had been called to this fact as long ago as Plato's time, that minds abnormally developed in certain faculties are apt to be deficient in others, and Montaigne was no exception to this rule. A number of his remarks show clearly that he came very near being a degenerate, while his exalted conception of the importance of his particular self indicates a neurasthenic state that he may have inherited from his Hebrew stock, among which it is so current.

If you can picture to yourself a man devoting his leisure hours for years to dissecting beneath the ultramicroscope his conscious and subconscious Ego, pursuing his subject to its furthest possible limits, and then writing it all down for the delectation of the public without sparing them one single particular, you will get some idea of Montaigne's essays; onto this main and general framework he strung a multitude of dissertations, anecdotes and opinions, and—last but by no means least,—he interspersed the whole with such an infinity of quotations from Latin literature as to be tedious beyond expression. He appears to have had his Latin classics literally at his fingers' ends, owing to the fact that Latin was in a way his first, mother tongue, his father having insisted on his being taught and speaking Latin from his babyhood, this having been his only language up to the age of six when he began to learn French.

It is quite safe to say that there is no detail in Montaigne's life that has not been handed down to us in full, at least so far as concerns the working of his mind and of his bodily functions, his tastes, occupations and views of life. His essays were written piecemeal, during many years, in health and in sickness; and with such a method of procedure it is evident that a man on the perpetual outlook for something additional to say about himself would in the course of time make his study pretty complete. The degree to which this completeness was pushed it is unfortunately impossible for me to relate. It is a common thing to hear that French is such a wonderful language,—you can say anything you like in it without shocking the audience; but Montaigne enters into details as to his bodily functions, and gives them in the most matter-of-fact manner, that simply make you jump when you meet them, even though expressed in his elegant French. It is, consequently, equally safe to say that very likely since the world began no one has framed for posterity so minute a description of himself; the only pity is that the object of this intense and protracted scrutiny should not have been somewhat more worthy of posterity's interest. Great men are great because they are in advance of their age, and this constituted the main difference between Montaigne and Rabelais. Rabelais looked at things from a height, so as to obtain a general view,—he also gazed forward into times to come; Montaigne busied himself so much with psychologic introspection that he could not get beyond the present, while his real subject of predilection was the Roman past. Rabelais says next to nothing about himself; Montaigne writes of little else.

I must candidly admit that personally I found this author plainly tedious. It would be foolish to deny his talent; but to what useful purpose was this talent put? In speaking of Cicero Montaigne remarks that whenever he devoted a passing hour to that author, and afterwards endeavored to sum up what he had derived from that reading, he "usually found nothing but wind"; would it be sacrilege to say the same about Montaigne? The construction of these essays is altogether extraordinary. He had but one topic, himself; consequently it does not seem necessary that he should have divided this topic into sections; chapters or essays. He turns the tap on, and apparently the stream flows as regularly and indefinitely as any other well-constructed spigot. But that does not appear to have suited his ideas of what a book should be; so every now and then he shuts off the flow abruptly, puts a full stop, and calls that piece an essay. Then he felt obliged to give the essay a name; so apparently he glanced hastily over the loose and scattered sheets, took any idea that caught his eye, set it on the first page, and the "Essay" was finished. Whereupon he set the tap running about himself again, and after a sufficient interval shut it off once more. If anyone thinks that I am exaggerating in the least, let him read, for instance, any of the following chapters: on the resemblance of children to their fathers; on the different kinds of vehicles; or concerning the lame,—and he will see how much these essays contain that has any bearing on their titles.

In fact, I should never have thought of including Montaigne in these sketches had it not been for the reason that he, more so even than the other two writers, is the one that had most to say about the medical profession. Not that he neglected the law,—oh, by no manner of means; every now and then you come across such amiable remarks as these in its connection: "consider the form of justice to which we have to submit,—a true evidence of human imbecility, so much contradiction and error does it contain"; or, "the ugly traffic that cloaks itself with the honorable title of justice"; or again, "we call justice the often very inept and very iniquitous dispensation and appliance of the first laws that come under our hand." But with Montaigne the law was an altogether secondary affair; after the manner in which his close predecessor Rabelais had handled the legal profession, the field could be fairly considered cleared once and for all. Montaigne's target was medicine, and it must be freely admitted that against it he makes out a pretty strong case. Over and over in the course of his essays does he give vent to his contempt for medicine; but if anyone desires to get a succinct view of what he has to say on this subject without wading through the whole of the author,—a longish procedure,—crede experto!—let him merely read Chap. 37, Book II. If that is a reliable exposition of the state of medical knowledge and practice of the times, no one will deny that the current opinion concerning physicians, expressed more or less fully by all the prominent writers of the period, seems to have been amply justified.

Montaigne, however, can scarcely be looked on as an unbiased witness; in fact he announces this fact plainly himself in the opening paragraph of his main Philippic against medicine, the one that begins with the courteous exordium: "Que les medecins excusent un peu ma liberté." He there says that it was from his father that he derived his "hatred and contempt" for medicine, which indeed was an hereditary trait among his ancestors,—his father having lived to 74, his grandfather to 69, and his great-grandfather to nearly 80, "without having taken any species of drugs." He considers this family experiment, which had extended over almost two centuries, as a strong argument against the necessity of medicine. But his views on this subject apparently underwent a certain degree of modification. He expressly states that all the first part of his life, up to 47 or thereabouts (Montaigne died of quinsy at 59), he passed "in perfect and entire health," and repeatedly in his essays he proclaims his profound appreciation of the value of good health, thus: "health is a precious thing, the only one, in reality, that deserves our using not only time, sweat, trouble and means, but even life, in its pursuit;" or, "health, the finest, most invaluable present Nature can possibly give us"; or again: "Health is a solid pleasure, with flesh and marrow . . . Health, for God's sake!" So that his feelings on that point are unimstakable,—the difficulty was his radical conviction that nothing the medical doctrines of his day could do would in any way help toward the maintenance or recovery of the said condition of health. For at the age mentioned the unfortunate man fell from this unbroken record of health into the lamentable state of chronic recurring renal lithiasis;

and whereas during the first half of his essays his attitude toward the profession is one of indifferent, hereditary contempt, this frame of mind changes toward the end of the second book, where he has suffered the tortures of migrating calculi without the beneficent effect of morphine, and he proceeds to analyse his views on medicine in the light of the rays of the afore-mentioned ultra-microscope! However, later on, and more particularly in his final essay "On experience," time has brought to his aid the philosophy of age and indulgence, and he is somewhat less severe in his strictures.

Montaigne's arraignment of medicine before the bar is conducted with unfailing courtesy,—he counted among his personal friends many eminent practitioners,—and, it must be admitted, with a general spirit of fairness; and possibly the fact that a man in the clutches of recurring renal calculi could so control his natural inclination to hit out at somebody as to view the case in a just manner and hide all bitterness and scorn, makes his accusation only the more telling. His father had succumbed from vesical calculus at the age of 74; the disorder was, in consequence, hereditary, and Montaigne speculates at some length on that knottiest of problems, how it can be that in one tiny cell can be conveyed from parent to child not only the most evident physical and mental traits but the predisposition to a given disease,—a fact peculiarly striking in his case, since he was born twenty-five years before his father had any symptoms of calculus, while his own calculi did no put in an appearance until he was 47! This problem he got no farther in solving than many another good man, since, just as it appears to be one of the most curious phenomena in the whole of Nature, so it seems likely to remain one of the most inscrutable.

Among the sarcastic generalities that he levies at the devoted medical men's heads can be cited the following: "If your physician wishes that you should sleep; take wine, or this or that viand, do not be troubled; I will find you another to say just the contrary." "Who ever saw a physician use a colleague's prescription without first adding something to, or eliminating something else from it." "The arts that promise to keep body and soul in health promise much; on the other hand there are none that keep their promises so badly." "Of medicine I am ready to believe anything good or bad; for, thank goodness, I have no dealings with it. I am not like other people, for I despise it always; but when I am not well I begin to hate and fear it besides, and reply to those who urge me to take some remedy, that they should at least wait until I am restored to health and strength, so that I may be better able to resist the strain and risk of the drug." "They would not be able to advance any argument, but I should be prepared to supply an adverse one of equal validity." These few examples could be multiplied to almost any extent, so often does the author return to the subject.

To come now to more specific and detailed griefs, anyone with only a superficial idea of the medicine of those times will at once see that Montaigne's task was an easy one; the art of medicine today is bad enough, in all conscience, but that of the Middle Ages, was simply hopeless, although, curiously enough, even in that chaos Montaigne had sufficient acumen to distinguish the greater surety of surgery when compared with its sister-branch: "surgery seems to me much more certain of itself, because it sees and handles what it does,—there is far less room for conjecture and guess-work." Referring to medical doctrines in general he lays stress on the many and fundamental changes to which they had been subjected, and speaks of "the perpetual disagreement in the opinions of the chief lights of that science in ancient times, not to mention the controversies and fluctuating views that they uphold among themselves at present." He shows how the different writers among the Greeks varied in the most hopeless manner in the causes to which they ascribed the origin of disease, and cites one authority as saying that "the most important science in use, that charged with the maintenance of our health, is, unfortunately, the most uncertain, vexed and disturbed by the greatest number of changes." Doctrine succeeded doctrine, each one, as we see them now, more extraordinary than the last, and—fact which alone should have sufficed to shake all faith in their value,—one doctrine differing so totally from the next as practically to have no common point of contact.

Passing from doctrines to the physicians themselves, Montaigne of course could not fail to hold up to derision "the prudent and forbidding grimace of their appearance and behavior," as also the fact that all medical meetings and consultations were as sacred and secret as in the times of Aesculapius. But in the latter particular he thinks they are well-advised, "for, if their irresolution, the weakness of their arguments, theories and opinions, the bitterness of their wranglings, filled with hatred, jealousy and self-esteem, were to come to the knowledge of the public, a man would have to be strangely blind if he did not think himself in jeopardy when in their hands." Proceeding, we pass on from physician to patient. "If I had been one of them I would have made my discipline more hidden and mysterious still; they began well, but did not continue in the same vein. It was a good commencement, to have made their science originate in the gods and spirits, and to have adopted a language and writing peculiar to themselves; this is a good rule, one that accompanies all fantastic, futile and supernatural arts(!) The patient's faith must help, through hope and belief, their intervention and assistance; so much so that they hold that the most ignorant and ordinary physician is of more use to a patient that believes in him, than the most capable one if he be unknown!" And shall we refer to their materia medica: The left foot of a tortoise, the urine of a lizard, the droppings of an elephant, blood taken under a pigeon's left wing, or pulverized rat excrements; pills given in uneven numbers, the importance of certain days and seasons of the year, the stress laid on the hour at which the herbs they used were to be picked,—"and other monkey-tricks that have a greater appearance of magical enchantment than of solid knowledge." Montaigne admits that certain drugs do have an action, "as any ordinary person can see for himself; horseradish produces flatulence, and senna loosens the bowels . . . in fact, what other results is there from all this diversity and confusion of prescription than that of clearing the digestive tract, something that a thousand common domestic remedies can accomplish." And he thereupon proceeds to go into that venerable, that time-honored question as to whether the use of laxatives is rational or detrimental: "who knows whether the human system does not require the retention of this refuse up to a certain point, just as wine needs its sediment in order to keep well." He also brings forward the authority of the august Plato, in this connection; "of the three kinds of movements special to us, the last and worst is that of purgation, which no man, unless he be out of his senses, should undertake except at the direst extremity; he thereby disturbs and awakens the disorder by injudicious interference"—the latter remark having possibly more sound common sense in it than may appear at first sight, although just how much competence Plato possessed in such matters may be an open question. Montaigne refers to the well-known efficacy of remedies that come from distant and unfamiliar regions: "We do not believe much in medicine that we understand, nor in herbs that we ourselves can pick. If the nations from whom we procure guaiacum and sarsaparilla have any physicians, imagine, by the inverse working of this same law, the rarity and high cost among them of our cabbages and parsley? For who would dare to look down on substances brought from such a distance at the

price of so much travel and risk." Finally, one of his crowning paragraphs of ridicule is that in which he deals with the compound prescription. "The promises of medicine are increditable; for having to treat different and contrary symptoms, which often occur together and must be interdependent, they would have us believe that of their ingredients the one will warm the stomach, the next refresh the liver, the third go directly to the kidneys or even bladder without affecting any other organ, and retain its full effect during this long and devious journey, etc., etc.; and that when a draught of this nature has been prepared, is it not somewhat visionary to expect that these various essences will divide and sort themselves out of their own accord, and proceed on such different errands? I should fear that they would lose or exchange their virtues; and who could hope that in this liquid confusion the properties of these simples will not corrupt, confound and alter each other?" And he ends up this admirable *critique* by a kick at the humble compounder of this fearsome draught: "And in the end the concoction of this medicine depends on another man of the art, to whose faith and mercy we again have to entrust our lives!"

Montaigne's *positive* views on medicine are really not so bad as might have been expected; in fact for the times they may even be called creditable. "Experience has furthermore taught me this, *"that we are ruined by our impatience.* . . . The constitution of disease resembles the constitution of animals; their fortune, as well as their duration, is determined at their birth. Whoever tries to check them abruptly, by force, only lengthens and multiplies them. . . . We ought to let them run their course; and I find that they stay a shorter time with me, who do not interfere with them. . . . Let Nature follow her laws; she knows her business better than we do. "But,—someone will argue,—such a person died in that way!" So will you,—of one disease or another; how many have died in spite of the many physicians hanging on to the seat of their trousers? We must endure patiently the laws of our condition: we are destined to grow old, and weak, and to fall ill, in spite of all the medicine in the world."

Some of Montaigne's stray remarks are worthy of all attention. How, for instance, is this, for an American high-pressure audience: "Have you, during your lifetime, *known how to rest?* If so, you have done more than he who has conquered cities and empires." Or this, cited from Socrates: Someone related to him that a certain person had derived no benefit from a voyage he had taken; "perfectly naturally, replied he,—he took his own personality with him on his travels!" The quaintness, also, of the following detail is not without its savour: "My teeth have always been so good as to approach excellency, as I learned when a child to rub them with my napkin both in the morning and before and after eating."

Medically speaking those were, alas! the dark ages indeed, and we had better draw the veil. We have been referring to occurrences now three centuries old, only to condemn them beyond appeal; let us hope that our descendants of three centuries hence will not have grounds to mention us in similar terms? Whether we turn to Rabelais, to Montaigne, or to Molière, the picture is the same, a state of affairs in medical matters that it is simply impossible for us to understand; so that, all things considered, what these writers had to say was more than justified by the facts. Even such a serene intellect as Plato was moved to remark that lawyers and physicians are a poor stock-in-trade for a country! But the most withering piece of sarcasm on the medical profession that I have ever come across is from Boileau's pen; it is to the effect that the point that in his opinion constitutes an unanswerable argument to prove the superiority of animals over man is, that they have no physicians, and attach no superstitious belief to the number thirteen! "S."

EUGENICS AND SEX HYGIENE.

BOSTON STATE HOSPITAL—PSYCHOPATHIC DEPARTMENT.

BOSTON, July 24, 1914.

Mr. Editor: I note on page 168 of the July 23d issue of the MEDICAL AND SURGICAL JOURNAL, a medical note entitled "Swiss Legislative Eugenics." I am sorry to see that the MEDICAL AND SURGICAL JOURNAL has joined the ranks of those inexact medical and lay journals which identify the term "Eugenics" with the term "Sex Hygiene." It seems to me that our interest in the true eugenic movement should lead us to confine the term "Eugenics" so far as possible to factors having some little bearing on the problem of heredity. I recognize that sex hygiene is an important interest to hereditarians, but I should not agree that the Swiss law requiring health certificates for brides, or the Wisconsin law, about which so much has been written, could be properly regarded as eugenic laws. They are sex hygiene laws.

I believe somebody should find time to write an editorial on the distinction between eugenics and sex hygiene.

Yours sincerely,

E. E. SOUTHARD, M.D.,
Director.

RECENT DEATHS.

DR. WILLIAM HENRY CARPENTER died at his residence in Brookline, June 23, 1914, aged 77 years. He was a native of Uxbridge, Mass., and taught school in Connecticut and Rhode Island until he had accumulated money enough to study medicine. He received the degree of M.D. from the Dartmouth Medical School in 1876 and soon after settled in Brookline, making a specialty of the diseases of the eye, ear, throat and nose. His widow survives him.

DR. THEODORE ERSKINE HAMILTON, aged 80 years, died at Springfield, July 21, 1914, of cerebral hemorrhage. He was a graduate of the Wilbraham Academy and of the College of Physicians and Surgeons (Columbia University) in 1861. After practising medicine in Chicago, Ill., for a year or two he settled in his native town, Somers, Connecticut. During the Civil War he was surgeon in the Eighth Connecticut Volunteer Infantry, Army of the James, and at its close practised in Somers until 1871, when he moved to Springfield. Here he was engaged in practice until the time of his death. He is survived by his widow, a daughter and a son. Another son, Dr. Erskine Erasmus Hamilton, died in 1901.

DR. HENRY CLAY ENO, a retired physician of New York, formerly well known as an eye and ear specialist, died on July 16, in his 75th year. He was graduated from Yale University in 1860, and from the College of Physicians and Surgeons, New York, in 1864. During the latter part of the Civil War he served as a medical cadet.

DR. WILLIAM JOSEPH O'BYRNE, of the borough of the Bronx, New York City, died from cardiac disease on July 19, at the age of 69 years. He was a native of Georgia, and was graduated from Bellevue Hospital Medical College, New York, in 1870

BOOKS AND PAMPHLETS RECEIVED.

Clinical Examination of the Blood and Its Technic. By Professor A. Pappenheim. William Wood & Co. 1914.

Appendicitis, a Plea for Immediate Operation. By Edmund Owen, F.R.C.S. William Wood & Co. 1914.

The Biology of the Blood-Cells. By O. C. Gruner, M.D. William Wood & Co. 1914.

Scrofulosis. By Prof. Dr. G. Cornet. William Wood & Co. 1914.